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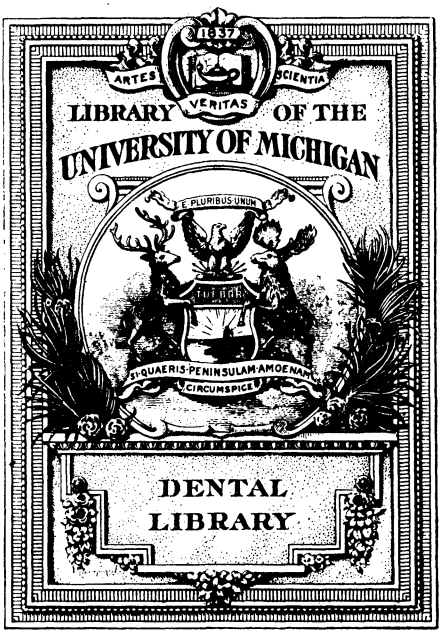
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AMERICAN DENTAL JOURNAL

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OUR POST GRADUATE COURSE

OPERATIVE DENTISTRY.

BY R. B. TULLER, D. D. S.

THE USE OF AMALGAM.

(The Old, Old Story.)

Filling teeth with amalgam, through good, bad and indifferent manipulation, is a practice as old perhaps as dentistry, but to do it in a way to obtain the best results of which the material is capable, is not the simplest thing in the dental art. And yet, for all that, it is a substance that without the most expert manipulation that should be given may be made to preserve many teeth. No operator, if he is careless or indifferent, or if he be lacking in native ability, though earnest in disposition to do the best, will be at all likely to make good fillings with anything; but as between gold and amalgam he will stand some chance of doing good with the latter where he would be unlikely to do any good at all with gold. The average operator with gold as his medium will not save many teeth, while the reverse may be the order with amalgam.

Still a good operator may fail with some amalgam fillings because of over-confidence in the ease of its manipulation and thus lack of attention to spreading the material to perfect contact with the walls. Force applied directly into the cavity towards the bottom may in some instances cause the filling of every inequality, but in many others such force leaves undercuts only imperfectly filled. Lateral pressure is required to insure perfect adaptation, and distinct attention should be given to perfectly fill some undercuts.

With all that may be said against amalgam, and with all its imperfections (which, however, are not so many), it is the great tooth preserver of the masses who give any attention at all to their teeth. The writer has seen amalgam fillings that have done service for fifty years. The same may be said too of some old non-cohesive gold fillings; but that does not detract anything from the amalgam as a good filling material and something that may be used when gold, nor really

any other satisfactory substance, could be used. It is hard, really, to estimate the great value of amalgam, both to the dentist and his constituents, since nothing else can quite take its place.

Some of the characteristics of amalgam as a filling material are ideal; its color after oxidization in the mouth being its chief objection, when the combination of ingredients have been correctly proportioned in the make up to eliminate shrinkage and expansion. If it remained always the cheerful frost white it exhibits immediately after crystallization, the color indictment would not stand very seriously against it, not even for some anterior cavities. A plastic material that will become hard and enduring in a reasonably short time, and having a tolerable color susceptible to a high permanent polish, is desirable at all times in dentistry.

If gold could by some means be made plastic as amalgam can be made, and then harden as does amalgam without shrinking and change and susceptible as now to high polish, and keep its color, there would be few fillings made by the malleting process; except perhaps some contours difficult to produce in a plastic and have them hard and strong enough for use when the dam is taken off.

Nearly all amalgams today are made, by producers, along established proportions that overcome either shrinkage or expansion, or expanding less than 20/1,000 of an inch in preference to 0 or any shrinkage. When such a material is used properly mixed with mercury, and shrinkage and expansion eliminated, the faults that occur are in the manipulation, but even in careless and indifferent hands is bound to produce more tooth preservative fillings than the average gold filling.

Amalgam fillings are usually held in place by more or less well-defined undercuts, such as would rarely or never be used for the retention gold. If any recess is made for the retention of gold, a distinct effort is made to force the gold into it. The same should apply with amalgam, but being a plastic some operators are inclined to think the natural spreading of the substance will take care of such inequalities without any special effort in that direction, and that is where a mistake is made; for while it may do so in the main, there are too frequently undercuts that are not properly filled. When the force used to pack amalgam is used all in one direction, some undercuts and particularly abrupt ones near the opening, as for instance

those under the strong-arched enamel at the buccal and lingual horns or cusps of bicuspids and molars, are left without being well filled and condensed.

The careful painstaking operator will not overlook these things; but the indifferent or hustling fellow, bent on accomplishing a lot of work in a short space of time, is apt to cram the cavity full, sweep away the surplus and go on to the next one. It has been said that the easy working material leads to shiftless, careless methods; but if the operator is so inclined it is the same with anything. Such an operator may work harder and longer on a gold filling, but with not half as good preservative results as with the hasty amalgam, with which he stands some chance even in haste, to make good fillings.

It is claimed by many that the drier an amalgam can be mixed and be at all workable, the better will be the filling. This no doubt is true with the skillful and careful operator, but the drier an amalgam is if inclined to crumble the more difficult it is to insert and to adapt to the walls. The drier it is the more it approaches the difficulties of packing gold, with more difficulty of conveying it to the cavity, and especially upper ones where gravity exerts its influence to cause the pieces to drop out before the operator has a chance to press them to place. If too dry much of it will waste, ordinarily, before the cavity can be filled and condensed. If enough mercury has been introduced to produce amalgamation, which is an essential, probably no one could find fault with the filling once it is accomplished; but in the opinion of the writer with many other practitioners of years of experience, there is an easier way that this experience teaches is thoroughly effective. It is rational, too, more so than trying to tamp a lot of sand or gravel, so to speak, into a hole or cavity bottom side up.

Amalgam filings or shavings should be mixed with mercury as stiff as it will stand good hard compression with a spatula without crumbling. If pressed in fingers, it should show the markings of the skin. If the operator's fingers and palm of hand are inclined to be moist all the time he would better mix some other way than in the hand. A piece of rubber dam fixed with a thumb hole at one corner may be laid over the palm, and the finger used may be covered with a rubber finger. Or one may use an amalgam mortar. The mercury should be dropped out first and then a portion of the filings worked

in thoroughly. Add more filings a little at a time until the mass is as stiff as desired, and that should not be stiff enough to crumble. Make a little cigar shaped roll of it, and divide into several parts of convenient size, first squeezing the mercury towards one end. That end will be the softest, and is to be used first in the cavity, using any convenient means to press it to the walls and inequalities. A bit of cotton rolled into a hard ball and held in pliers, answers well, in some instances, and if the mercury is so much in excess as to be squeezed out, it will come away with the cotton. More filings may be added to what is yet unused if desired. With some amalgam already fixed in the cavity, pretty dry pieces will adhere when inserted, and if excess of mercury again shows it should be wiped out. The last that goes in may be as dry as can be possibly handled. If this is thoroughly condensed the entire filling will be of uniform consistency. If the last that is added still brings a soft mess to the surface, crowd out all that can be and again add the dry until everything is as desired. A filling left with too much mercury in it will be too long in hardening and will change shape in hardening, but there must be enough in it to amalgamate the filings, and it must be susceptible to molding and shaping without crumbling; though in building out proximal surfaces a very thin matrix should always be properly adjusted to give the contour and to hold the amalgam securely against good strong condensation.

The more expert the operator the drier he can use amalgam successfully, but as heretofore said the drier the amalgam the more there is approach to the sort of skill required to fill with gold. Amalgam should be plastic, moldable; never crumbly; never pasty.

In many instances of considerable undercutting or enlarging the interior beyond the dimensions of the orifice the use of cement as a lining is usually good practice. Some operators place the cement and allow it to harden before placing the amalgam, and this is usually the better way with proximo-occlusal cavities; and then cut out as much of the cement as desired, shaping what remains consistent with good anchorage for the amalgam to follow. In cavities surrounded with wall, one may safely introduce the amalgam into the soft or partly soft cement, dislodging any excess that crowds out to interfere with good marginal contact of the filling.

There are many cases of cavities that are simply small round

holes, and of course slightly undercut to retain the filling. These the simplest of all, one would think, are often not properly filled. Crowding in the amalgam by simple direct pressure toward the bottom is not enough. When such a cavity is crowded full, an instrument a bit smaller than the orifice should be pushed into it to force it to the side walls, after which a little more material may be needed to complete it.

Unquestionably amalgam is doing more to preserve the teeth of the masses than gold; first, because it is less expensive and used more extensively and again because the average operator can make a better preservative filling than he can do with gold. Nothing is going to replace it but some other plastic substances—possibly some cement that may be discovered or invented that will be as easily worked or more so, and that will stand the endurance test as does amalgam. All efforts to produce an amalgam from various metals, that will fulfill all other requirements of such a material, and remain white or a rich, unobjectionable color in the mouth, seem to have failed. It may be found yet. Much was hoped for in aluminum some years ago, but its decided lack of affinity for about all other metals makes it of little or no value in this direction, as well as in alloys generally.

Amalgam fillings may be frequently finished out with gold in a way to improve the appearance. If the cavity is one all surrounded by a wall, gold may be followed in upon the fresh amalgam, crystal gold being better adapted to this than leaf gold. The first gold so introduced will take up enough mercury to make the gold look like the rest of the amalgam, but will soon build beyond the reach of that influence and not be affected. If the cavity is one open on one side, it will be necessary to have a firm matrix to retain the filling, else the amalgam will crumble and crush out under the force of inserting the gold.

(To be continued.)

BACTERIOLOGY AND PATHOLOGY.

BY GEO. W. COOK, B. S., D. D. S., CHICAGO, ILL.,
DEAN OF DENTAL DEPARTMENT, UNIVERSITY OF ILLINOIS; PROFESSOR OF BACTERIOLOGY, UNIVERSITY OF ILLINOIS.

In the study of bacteria, from a laboratory standpoint, it is necessary to constantly bear in mind that foodstuff or bacteria does not differ materially from foodstuff that is essential to all plant and animal life, with the exception that it is highly important that the preparation be somewhat different for each individual specie. When we say the foodstuff does not differ so materially, we mean that the physiological assimilation of nutritive substance must in the main consist of three highly organized compounds, namely, proteids, carbohydrates and fats. A close chemical analysis in the physiological structure of animal and plant life reveals the fact that these three compounds are important constituents of the tissue and cells of both the animal and plant life. When any one of these are removed from a compound of foodstuffs the plant or animal very early manifests itself as incapable of carrying on a normal functional activity. But with these compounds there must also appear other important elements that belong to the inorganic substances.

The staining of the living cellular substances and the microscopic examination of them has taught so much of the morphological appearance of cell life, and has revealed so many important factors that belong to the science of biology, that we sometimes wonder if our resources of investigation have not almost come to an end. But within the last few years a great impetus has been given to physiological micro-chemistry, and the work of many of the most skilled investigators has revealed the morphological changes that take place in the cellular structure of a given tissue or individual cell when it has been deprived of any one of the organic or inorganic compounds or elements.

It has farther been shown that many of these cells differentiating morphologically also show some chemical changes that bring about the fundamental difference in the physiological function as well as the morphological appearance. Miescher, Schwarz, Altmann and Kossel have shown the distinctive chemical change in the cellular

elements of protoplasmia of both the cell and the nucleus, and these micro-chemical differentiations are brought about by the distinctive changes in the foodstuff of many of the plant and animal lives. However an attempt has been made to show that the microscopic cells of living substances all contain a nuclei, but this is a question that has not been thoroughly cleared up, with reference to bacterial forms of living substances. In the preparation of bacteria for staining, after having been properly grown, they show a granular appearance but, as a rule, do not show any nuclei.

Some investigators are inclined to believe that these granules that appear in the bacterial cell are portions of the nuclei broken up. While this may be true, and doubtlessly to an extent is true, still as we said before there is no strong and positive evidence other than the fact that these granules contain a chromatin substance; and of course as the chromatin seems in a large majority of living substance to be the vitalistic property of the cell, it is barely possible that this particular chromatic compound may have some very strong and important influence on the vitalistic properties of the bacterial cell. These are facts that have not been thoroughly demonstrated. But it might be well to say that the chromatic compound in living cell or that part of the cell that stains more deeply is composed principally of nucleic acid. In other words, when this substance is brought in direct contact with certain stains it stands out as prominently as acids in reaction, therefore it is called nucleic acid. In the bacterial cell this fact has not revealed itself as being as true in the bacterial cell as in some of the higher forms of cellular substance.

The investigations of Vaughan and Novy have demonstrated that the nucleus of the cells of the higher form do give acid reactions, and in fact they have isolated an acid from the nucleus of the multicellular forms of life. We are not in a position to make any statements in regard to what this important investigation has revealed with reference to the bacterial cell, but we do know that when bacteria is placed in a stronger salt solution than that of a physiological solution that these granules appear in the bacterial cell; and in many instances they stain as though they were acid, showing the possibilities of an acid existing in this chromatin-like substance in the bacterial cell.

The investigations upon this point of acid or non-acid reaction

of the cell is one that possibly bears an important relation to physiology as well as pathology. It has been shown that muscular exertion to the point of fatigue brings about an acid reaction in the muscular cells. It has also been shown that the exercise of a muscle increases the cellular substance with also an increase of the nucleus whenever a muscle has been exercised to a point that the physiologists call fatigue, and that fatigue is recognized by the lack of response of the muscle to stimulation. We then have a greater amount of acid reaction in the cellular substance.

If such physical and chemical changes take place in muscular tissue it might be equally as important to recognize the possibility of such condition taking place in the nerve cell. If our present basis of physiological research is correct we are justified in believing that such changes take place in the nerve tissue as well as in the muscular tissue. Upon this basis may rest some of our physiological changes which we recognize as being physiological abnormal activity of certain secretions of the digestive tract. For instance, every one is familiar with the fact that when certain foodstuffs or certain agents come under the influence of sight or smell they cause the saliva to flow in great abundance. This is a condition that is brought about by the action of certain senses affecting the nervous system, but after a long continued stimulation through these senses the salivary secretions fail to respond to the action on these senses. The nervous stimulation has then reached a point of fatigue, and if these nerves supplying the salivary glands fail to respond, then the stimulation has been carried beyond a normal point and becomes an abnormal stimulant.

It has also been shown that an increased income of food invariably manifests itself in some animals as an increase in the volume of quantity of tissue formed; in other words, we have a certain stimulation of the digestive and assimilative cell to a certain point of increased volume and with it comes the increased volume of tissue and the constituents of the body. However, it is a well known fact that among the higher forms of animal life that only a small portion of food is assimilated in a given animal and all over that is again disposed of unused.

It has been observed that bacteria growing in certain culture media grows luxuriantly for a short period of time when transferred to this fresh media, but after a time there is evidence of some

chemical change either having taken place in the foodstuff itself or else the bacteria have been over-stimulated and passed into a more or less inactive stage. It may happen so many times that this inactivity is brought about by a chemical change in the environing conditions due to certain agents that pass out from the bacterial cell, rendering the environment of the bacteria such as to limit the power of proliferation. If this is true in artificial culture media it might also be true where these bacteria are located on the surface of the body or in the external openings of the body, such for instance as the mouth.

The inorganic elements that are so essential to the functional activity of the bacterial cell may become changed in the foodstuff and in this way change the environments of the bacteria. Sodium, calcium and magnesium are three important elements in the activity of living substance and if they are not present in the bacterial foodstuff the cell proliferation of the bacteria fail to respond in growth and development of their food environments. It is also quite essential that these bacteria have moisture and a temperature suitable for their growth. If any one of these inorganic substances are increased in quantity above a certain physiological activity they then become an antiseptic; in other words, they have a restraining influence on the proliferation of the bacterial cell. But when this quantity is removed the bacteria can go on in their developmental processes until some other interference may be met with. These are always important factors in the study of bacteria with reference to their growth and development. Of course it will be borne in mind that there is a variation of different specie of bacteria.

In the study of bacteria the point of greatest general interest are those bearing upon constancy and variability of form, and this constancy is recognized in the cellular structure as manifested by certain staining processes. We have called attention to some of the stains and the preparation of such stains in order that we might study with a better understanding the true form of these organisms. While we recognize bacteria as the lowest form of living substance capable of being investigated with our recent methods, we must take into consideration that the translucency of the bacterial cell is such as to render it incapable of being observed with the microscope and clearly defined without the methods known as the staining process. This process is to bring more accurately in the field

the form of bacteria and the changes which they undergo during their life cycle.

It is this interesting problem we deal with so constantly in all biological phenomena known to physiology or pathology. When we recognize that all cellular substances are by reason of their environments during their life cycle subjected to many influences both in the higher and lower forms, it is a question that is constantly being discussed as to when there is a normal physiological function going on. We sometimes see in tissue certain changes in which the structure deviates morphologically from its normal appearance. This change may be so gradual as to make it imperceptible for a considerable length of time, but after a while we see by microscopic appearance in tissue that it has changed and the change may be so slight as to render it almost impossible to see wherein the change has taken place. It is in this particular field where micro-chemical analysis must eventually reveal some unhidden facts in pathological anatomy. When we look at a dish of culture media containing growths of bacteria and the developing colony ceases to extend its margins, we then say that the growth has ceased. Then comes in the important question of how much change has taken place in the bacterial cell itself. We examine microscopically the bacteria in this colony and if they are a spore-forming colony we may find countless spores in the bacteria. We have then reached a conclusion that the bacterial cells have passed into what is known as the resting stage, and the power of them developing by what is known as the vegetative stage has been lost. But if these spores be transferred to fertile fields they will then develop into their typical forms and become an active vegetative form of bacteria. If they are forms of bacteria that produce fermentation they will as long as they are in the proper environment produce three things, namely, aldehyde, alcohol and acid. These three compounds go hand in hand in the process of fermentation.

In order for these germs to produce putrefaction the substance of their environments must be rich in nitrogenous substance. Bacterial fermentation and putrefaction are two terms that are always confusing to the student. These two terms are referred to by many writers as synonymous. But the term fermentation is usually applied to the bacteria that act more energetically on carbon compounds, while putrefaction is applied to those bacteria that more actively

operate in a field of foodstuff rich in nitrogen. Of course, there are many agents or compounds that are formed in both processes, but the principal things that are formed in each process of fermentation are the acids, alcohol and aldehydes, while in putrefaction we have certain alkaloidial-like substances known as ptomains. The ptomain group may be as variable in number and especially in their chemical formation, as there might be carbon compounds formed in fermentation. But it is important that we recognize that the action of these bacteria on the substance under consideration is very much the same in the general aspect of the function of bacteria in these substances.

Up to a few years ago it was considered impossible for any plant that did not possess chlorophyl or the green appearance to be able to decompose carbon dioxide, setting free the oxygen and utilizing the carbon in the construction of cellular substance. Plants containing no chlorophyl were said to lack the power of assimilating carbon dioxide. The assimilation of carbon dioxide by green plants takes place by a synthetic process of building up formaldehyde out of water and carbon dioxide. This is known as a process of polymerization. This process of polymerization may go on to form grape sugar, which is a multiple of carbon from two up to six. After the discovery of such a chemical synthetic process, E. Fischer was able to synthesize a carbonhydrate; Low started with formaldehyde and synthesized it into sugar. This chemical discovery took place through their remarkable observations as to how bacteria would break up grape sugar into polysaccharides like maltose and dextrine. As yet no one has been able to synthesize but very few of the nitrogenous compounds, although Fischer has on several occasions constructed many compounds that are very closely allied to proteid substance. He has also made some very extensive analyses of nitrogenous bodies and determined some of the elements that go to make up many of the proteid molecules, but he has not yet determined the atoms that are present in the proteid molecule. But it is hoped by many workers in this field of biology that the time is not far distant when they will be able to both synthesize and analyze this extremely complexed substance. Not until then will we be prepared to make anything like a definite statement as to all of the chemical changes that take place in the action of bacteria on nitrogenous substance.

(To be continued.)

DEVITALIZATION OF THE DENTAL PULP WITH ARSENIOUS ACID, TREATMENT OF ROOTS AND ROOT FILLING.

BY THOMAS L. LARSENEUR, D. D. S., CHICAGO, ILL.

(Continued from July.)

Pulp Nodules (pulp stones)—In these cases the devitalizing with arsenious acid is rather slow and in some cases almost *nil.* In calcareous and other chronic pulp degenerations the action is also delayed. In cases of pulp stones, where arsenious acid applications do not seem to take effect, pressure anæsthesia with cocaine may be valuable; some of these cases are sometimes very difficult to treat. Sulphuric acid may, in some instances, give good results. Whenever sulphuric acid is used, it is advisable to follow its use by an alkali, as sodium bicarbonate, to neutralize further action of the acid.

It will sometimes happen that in multi-rooted teeth that suppuration will be found in one or two of the roots and that the third root has a certain amount of live pulp tissue which is often very sensitive. In such cases, it is advisable to remove all debris of mortified pulp in other roots, washing the cavity with tepid water and phenol (about 10 per cent), and washing with pyrozone, drying canals with alcohol and applying a dressing of trikresol-formalin in the roots where there was suppuration. Arsenious acid as above described may be applied to the root where the pulp is still vital. The cavity may be sealed for three or four days, after which the dressing and arsenious acid treatment may be removed, always following the same aseptic precautions as previously described; for this treatment, it is best to apply the rubber-dam.

A very good combination for these cases of suppuration is to mix iodoform with creosote, or iodoform with trikresol-formalin. This treatment should be thoroughly sealed, as the iodoform is very penetrating and has a very unpleasing taste. This dressing should remain about three or four days, after which if no odor nor infection is found the roots may be filled with safety. In these cases as in all others, it is always best to wash the roots with pyrozone before they are filled. No matter what the case is, thorough mechanical removal of all debris of pulp or foreign substances should be resorted to before the roots may be successfully filled, and upon this depends the future health of the tooth.

If all operations have been carried out with antiseptic precautions, sterilizing the cavity, placing it under the rubber-dam, drenching the root canals with antiseptics, *and using none but sterilized instruments,* the canal will be found in an aseptic condition and is ready to be sealed by a root-filling.

The Root Canal-Filling.—An ideal root canal-filling should be non-irritating, should hermetically seal the canal and be unalterable in the conditions surrounding it. It should be removable if subsequent conditions demand it, and it should also be very plastic, should have no shrinkage.

Several preparation are in use for that purpose, such as chloropercha, forma-percha, oxpara, oximon, pustolene, and several others. Which of all these preparations is the most suitable to use? This is a rather hard question to discuss, as some operators will favor chloropercha, whereas others prefer oxpara or pustolene or some other preparation. Of course all these root-canal fillings have their merits, but I prefer their use for putrescent root-canals and in my estimation chloro-percha and guttapercha points are by far superior to any of the above so-called root-fillings, and here is the reason why. Chloro-percha may be forced to the apex of a root, sealing the apex, whereas all these other preparations will not harden sufficiently to allow the operator to force it to the apex, although it may be carried by it by the use of a guttapercha point.

The root-canal should be thoroughly desiccated with alcohol and hot air before any attempt is made to fill it, as this will allow the filling to be forced to the apex with more ease. The rubber-dam should always be applied before any attempt is made to proceed with this operation, and some care exercised to sterilize broaches and root-canal pluggers.

The filling of root-canals is rather a delicate operation and it should be followed in all its minute details. In multirooted teeth it is best to proceed with the larger canal, which should be completed before any attempt is made to fill the others, the smallest one should be filled last. The filling should have the consistency of a thick cream so that it will readily follow the direction given it by the broach. A small quantity of the filling is taken with a smooth broach and gently pumped into the canal until the apex is reached. The patient will usually notify the operator when the filling has reached the apex, as this always causes a slight irritation; more of the filling may be

pumped into the canal with the broach, after which it may be compressed by the use of a root-plugger. The operation may be completed by the use of guttapercha points and the canal hermetically sealed by using a heated burnisher, removing all surplus of guttapercha from pulp-chamber. The same operation may be followed for the other roots, with the exception that in small roots it is not necessary to use guttapercha points. When guttapercha points are not used, to hasten this operation of filling, it is advisable to have two solutions of chloro-percha, one thicker than the other, so that when the apical portion of the root has been filled the thicker solution may be used to great advantage. The force applied to the filling may be increased as the root is filled. Care should be taken not to have any air forced through the canal and apex when filling and this will be obviated if the filling is gently pumped into the canal.

TO REMOVE RUST FROM INSTRUMENTS.

Pharmaceutische Centralblatt prints an effective process for removing rust from surgical instruments. The instruments are placed over night in a saturated solution of stannous chloride, which causes the spots to disappear by reduction. The articles are then rinsed in water, laid in a hot solution of soda soap, and dried. It is well to rub them with absolute alcohol and prepared chalk. Another convenient method for removing rust is to lay the instruments is kerosene. Paraffine oil is the best preservative against rust, and the most convenient way of applying it without getting an unnecessarily thick coating is as follows: One part of the oil is dissolved in two hundred parts of benzine, and the objects, after being thoroughly dried and warmed, are plunged into the solution. Instruments with joints, as scissors or needle holders, are washed in the fluid, in order to cause it to penetrate into all crevices, and the benzine is then allowed to evaporate in a dry room.—*British Dental Journal.*

Our Foreign Department

THOMAS L. LARSENEUR, D. D. S., Foreign Department Editor

THE CONSTRUCTION OF CROWNS.

BY B. PLATSCHICK.

(Ash Quarterly Circular, London, April, 1908.)

The making of the masticating surface of a crown in wax in the mouth presents special difficulties, hence we will only deal with its construction upon a model.

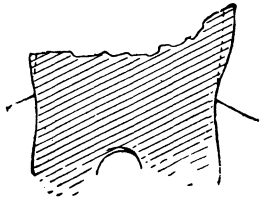

Fig. 24.

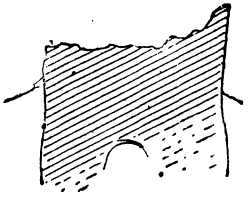

Fig. 25.

Let us consider two cases: (1) Where there is but slight loss of substance at the masticating surface of the tooth, or (2) where there is some notable portion of its substance missing.

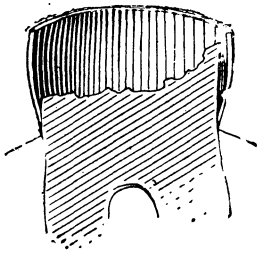

Fig. 26.

Fig. 27.

We may recall to the reader that the method generally adopted for the preliminary operations is as follows: The tooth (Fig. 24) is prepared in the usual manner, as shown in Fig. 25. After having

made the band by one or other of the methods in general use, and having assured ourselves that it exactly fits the root, or what remains of the tooth (Fig. 26), we fill the upper portion of the band with

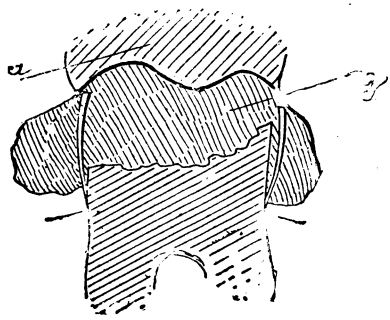

Fig. 28.

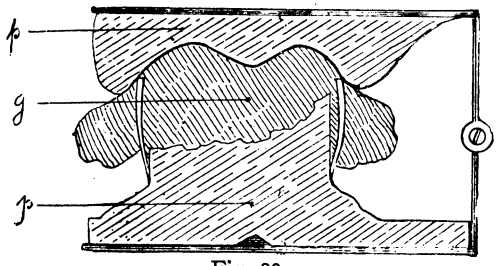

Fig. 29.

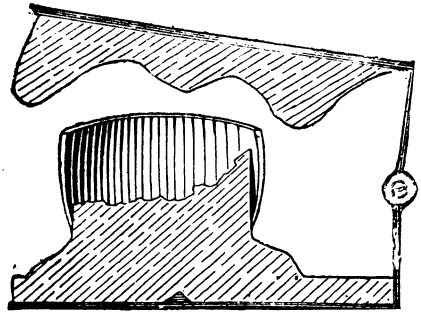

Fig. 30.

Stents' composition (Fig. 27). It is then placed in the mouth, and the patient is asked to close the teeth, whereby exact articulation is obtained Fig. 28. We now pour the model and its counter part,

mount it upon the articulator (Fig. 29) and remove the Stents (Fig. 30). The remainder of the impression of the tooth is left on the model and closed in the band, and the impression of the antagonizing teeth is left on the counterpart.

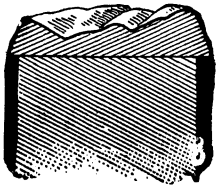

Fig. 31.

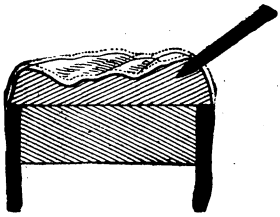

Fig. 32.

(1) In the first case, where there is a small loss of tooth-substance on the masticating surface, we replace the entire missing portion with gold. We proceed in the following manner: The model of the tooth is thinly painted with oil on the masticating surface. Upon this surface we place a small quantity of wax, which we trim with

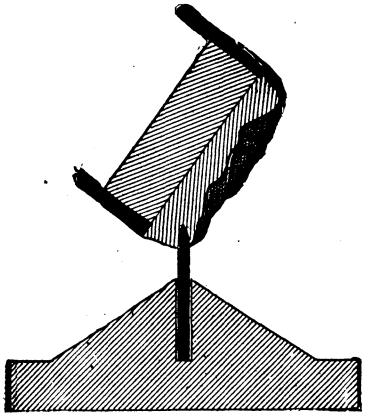

Fig. 33.

suitable instruments, slightly smeared with vaseline, in such a way as to give it exactly the shape which the gold to be fused is to assume (Fig. 31). It is necessary at this stage to pay the most careful attention to the articulation and to the relations of the neighboring teeth.

We try it in the mouth. If everything is right, we withdraw the band with the wax crown; a sculptor is useful for raising the band from the root. We thereupon heat one of the ends of a metal point,

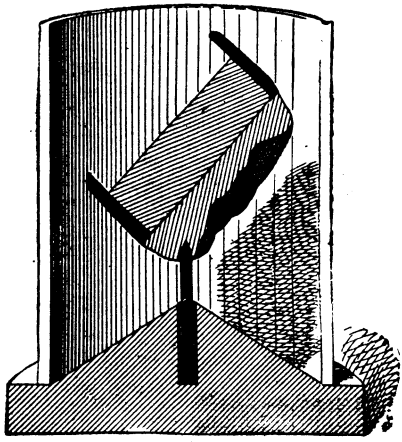

Fig. 34.

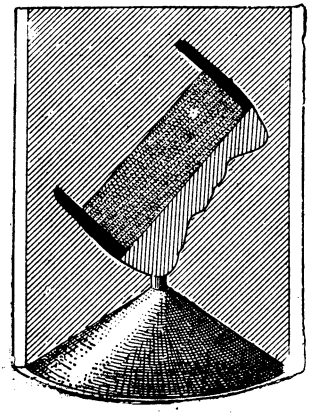

Fig. 35.

smear it with a little sticky wax, and press it into the wax crown, not too deeply, in a part which is of slight importance (Fig. 32).

With a very fine camel-hair pencil dipped in alcohol we remove from the surface of the wax crown every trace of oil or vaseline left on it by the tooth or by the instruments which have been used for modeling the wax crown to the desired shape.

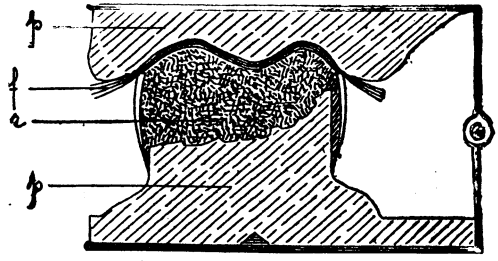

Fig.36.

We prepare a little investment to a thin consistency, then with a camel-hair brush dipped in investment a thin layer is coated over the wax crown; a little is also put in the interior of the band in such a

way as to cover the entire lower surface of the wax, and great care is taken to avoid the formation of air bubbles.

We take hold of the metal point with tweezers and introduce the

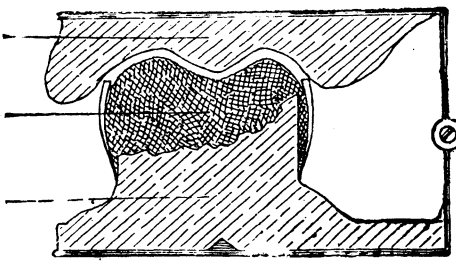

Fig. 37.

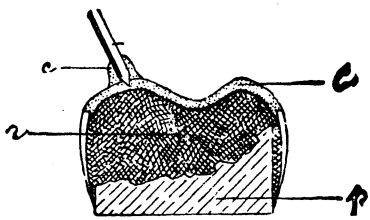

Fig. 38.

free end into the whole made to receive it in the center of the cone (Fig. 33), which we have previously oiled.

We place the metal cylinder upon the cone (see Fig. 34) and secure cone and cylinder together with an elastic band. We then

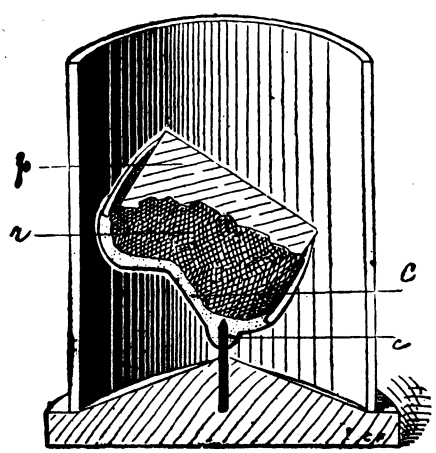

Fig. 39.

pour the mixed investment into the cylinder. As soon as the investment is sufficiently hard, we invert the cylinder and remove the cone. The removal of the cone leaves a funnel shape opening in the investment, at the bottom of which the metal point is still held in the wax

crown. We place the cylinder horizontally upon the wire support on the Bunsen burner. When the wax begins to melt, we withdraw the metal point, but leave the cylinder upon the Bunsen burner until the

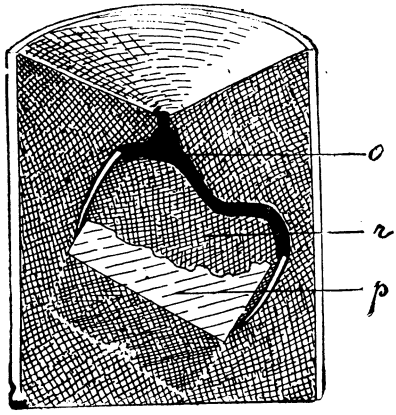

Fig. 40.

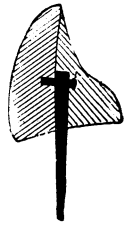

Fig. 41.

investment is completely dry and the wax entirely burnt out. This drying and burning out occupies twenty minutes. The cylinder is then removed from the wire support by means of special tweezers, and

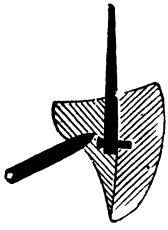

Fig. 42.

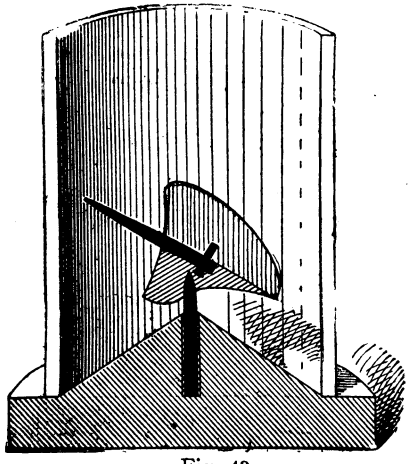

Fig. 43.

lay it on the press (Fig. 16) with the funnel-shaped opening uppermost (Fig. 35).

The work is then completed as for gold inlays. If all necessary

precautions have been taken we obtain an absolutely perfect crown, and if we have made an exact model in wax of the masticating surface there will be no need of the slightest touching up. The

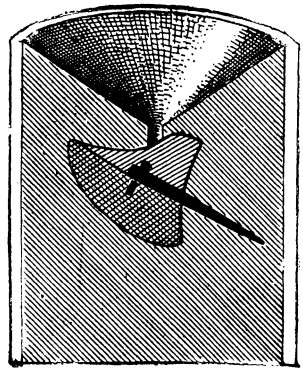

Fig. 44.

articulation, in particular, ought to leave nothing to be desired, for the simple reason that the wax crown was of exactly the height required for perfect articulation, and the crown of gold which is a reproduction of the wax is of exactly the same height. Before cementing in position, we finally try in the mouth, to see that all is in order.

(2) In the second case (which Figs. 24-30 particularly refer to),

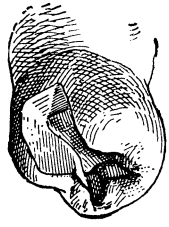

Fig. 4.

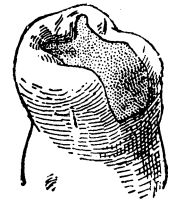

Fig. 5.

where there is a notable amount of tooth-substance missing, we must avoid using an unnecessary quantity of gold, and in order to do this we adopt the following method: We mix a certain quantity of investment of rather thick consistency; we fill the band with this investment, and bring together the two models or the two maxillæ by interposing between the investment and the antagonizing tooth several layers of silver paper in such a manner as to produce an empty space

between the investment and the antagonizing teeth (Fig. 37). This will correspond exactly to the thickness of the cap which is to be made in gold. After the hardening of the investment, we scrape it

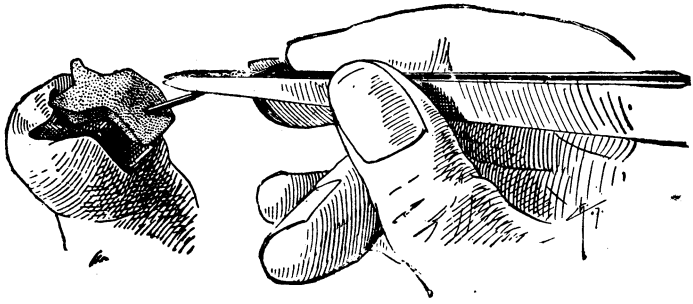

Fig. 6.

slightly upon the sides in such a way as to expose the edge of the ring (Fig. 37). We then place upon the surface of the investment a very thin layer of wax of exactly the same thickness as the removed layers of paper, and in this manner we obtain a perfect articulation. We then saw the tooth from the model in such a way as to be able to with-

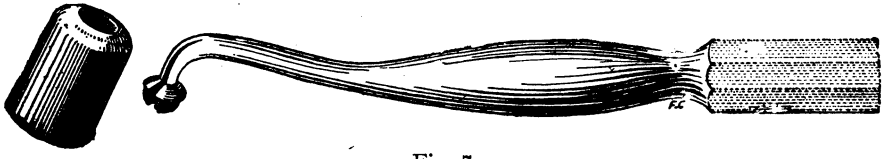

Fig. 7.

draw it from the model without altering anything. Fig 38 shows it detached from the model. As we nearly always have too thin a layer of wax for retaining the metal point E (Fig. 38), it is necessary to add a small bit of sticky wax to the extremity of the metal point for the purpose of keeping it in position upon the ebonite cone, and to make it firm enough in place to resist the shocks which are necessarily given to it in applying the first layer of investment and keeping it from air bubbles (Fig. 38). The remainder of the operations are analogous to those we have just described.

Fig. 39 shows Fig. 38 embedded in the investment, and Fig. 40 shows the result obtained. It is important to note that the gold of which the band is made must be sufficiently thick to permit of the cast masticating surface being united to it.

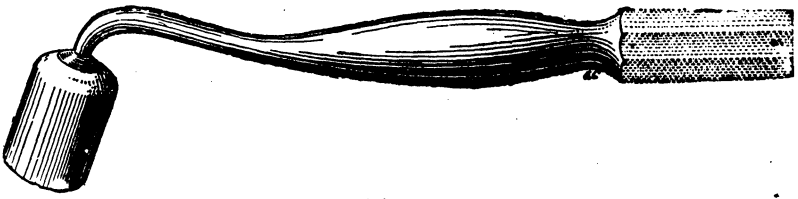

Fig. 8.

THE CONSTRUCTION OF A PIVOT CROWN.

Another application of the method consists of the making of pivot crowns. The *modus operandi* is extremely simple.

The preparation of the root and root-canal is accomplished in the ordinary way.

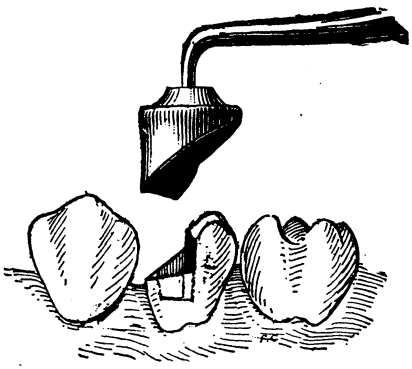

Fig. 9.

The artificial tooth does not require any special preparation; its pin may be double-headed or single-headed, bent or straight. The union between the gold and the platinum pins when the melted gold is forced into the mold is so perfect that no previous care whatever is necessary. Further, the pivot may be left straight or curved.

The porcelain tooth to be employed is adjusted to the root in the ordinary way. When the pivot has been arranged in position in

correct relation to the tooth, pivot and tooth are fixed together with wax. The back of the tooth is then built up in wax and shaped to suitable form, as shown in Fig. 41, with appropriate instruments. We here once more repeat that we may work in the mouth or on a model.

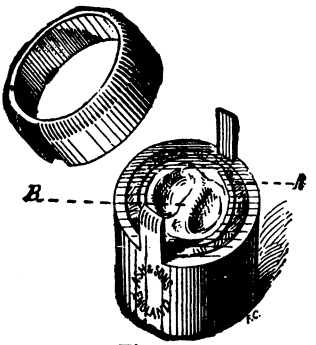

Fig. 10.

If we work on a model, it must be an exact and faithful reproduction of that part of the mouth which it represents, and the articulation must be perfect. If we work in the mouth it is important to see that the parts in contact with the wax are moistened with saliva, or to oil

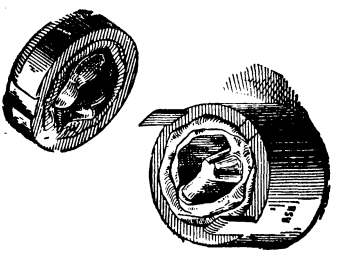

Fig. 11.

them. If we use a model it must be carefully oiled. Further, the instruments which we employ for shaping the wax must be slightly smeared with vaseline. We build up the heel (*talon*) (Fig. 41) by taking particular account of the articulation and the relation of the neighboring teeth.

We insert the metal point, which has been heated and smeared with sticky wax, into the wax form at an unimportant part (Fig. 42), and we introduce the free end of the metal point in the hole in the center of the cone (see Fig. 43). With a fine camel-hair brush dipped in alcohol we then clean the portion of the wax which has been oiled or bears traces of vaseline. This done, we mix the investment into a nice batter of medium consistency, and with a fine camel-hair brush we paint a very thin layer upon the wax.

The subsequent operations are carried out as in the general cases of inlays, viz: The metal cylinder is placed upon the cone, as shown in Fig. 43, and the cylinder and cone are secured together with an elastic band, and the mixed investment is poured in the cylinder. We invert and remove the cone, dry the investment and burn out the wax, as already described (Fig. 44), and convey the cylinder to the press (Fig. 16).

The solidity of the crown obtained in this fashion is marvelous. We should like to state that the metals employed for these pivot crowns may be ordinary solder, gold of any karat, or any other metal. No accident need be feared; our numerous experiments enable us to affirm that the teeth do not crack by the molten gold coming in contact with them. It is, all the same, indispensable that the porcelain should be perfectly buried in the investment and raised to sufficient temperature and kept at the high temperature for some time by the action of the Bunsen burner.

THE CONSTRUCTION OF GOLD INLAYS.

In order to make our explanations clear we will suppose that we have to deal with a cavity such as shown in Fig. 4. When the cavity is prepared we have the choice of two methods: the first, of making the inlay in wax in the mouth; the second, of constructing the inlay in wax upon a model which is run in an impression cup.

I. When the cavity has been protected from saliva, it is necessary to paint it with pure oil, to fill it with wax (Fig. 5), specially softened over the flame, and to tell the patient to close the mouth in order to obtain contact with the antagonizing teeth. After the wax has been shaped and trimmed with a spatula and burnishers painted with oil, we wait until it has cooled, or it is cooled with a jet of cold water, and cut it or diminish it according to our needs. We then take one of the special points or sprues with the tweezers; we heat slightly one of its

extremities, coat it with model cement and insert it in the wax impression at a spot where exactitude does not much matter. After further cooling with water, we withdraw the wax from the tooth (Fig. 6). This is done with the greatest ease, owing to the previous painting of the cavity with oil or to the moisture of the saliva.

II. The second method is mostly adopted because it is the easier, the surer, and gives less anxiety to the operator; moreover, we may consider the work practically done after the impression is taken.

TAKING THE IMPRESSION.

The substances which we may choose for taking the impression are wax, gutta percha and Stents' composition, but the best of all for nearly every case is Girdwood's Dental Lac, which sets rapidly, is very hard and yields an extremely sharp reproduction.

The impression may be taken by the usual method known to all practitioners, but we consider it useful to give some hints upon the employment of Roach's impression cup, which is made of soft metal that can be cut according to the required form and length. It is supplied in different sizes which are of great service. After having fixed the cup upon the handle, the end of which is split, we cut it to the required shape for taking the impression of the cavity of the tooth to be filled. We then fill the cup (Figs. 7 and 8) with the plastic material which we have chosen, gently heat the material, press it upon the tooth in question (Fig. 9), and keep it in position long enough for the material to harden.

We then withdraw carefully the impression from the tooth, detach the cup from the handle by squeezing the spring slit at the end, place it in the lower portion of Ash's inlay ring, in which we have already put the necessary quantity of Moldine or Clayite (Fig. 10, A, Moldine or Clayite, B, Impression), and oil the impression. Proceeding, we put the top half of the ring in position and pour the model as described below.

THE POURING OF THE MODEL.

The model may be poured in plaster of paris, but we do not recommend plaster of paris, because when it is thoroughly dry and hard it does not possess sufficient strength to bear the pressure necessary for the finishing of the inlay. Spence metal is preferable and it can be run directly over the impression; it hardens immediately and offers very great resistance to pressure. In employing Spence metal,

we heat it in a small ladle, specially intended for the purpose, taking care not to let the temperature rise too high and not to wait too long before pouring it, as it cools rapidly. If we find after it has been used several times that it no longer possesses its original fluidity we add a pinch of powdered sulphur in order to restore this quality.

By an alternative method we can fill the impression with amalgam or cement, which is allowed to harden perfectly, and we complete the base of the model with plaster of paris. The employment of the Ash's ring in this case is unnecessary. In all cases we must take care to soften the impression thoroughly in boiling water before removing the model. Where it is necessary we must see to the articulation and to the contact of the neighboring teeth. To this end we put in the tooth a little piece of wax to secure proper articulation, and when we have obtained the needful contact this is put upon the model and enables us to run a counterpart, which like the model, is mounted upon a little articulator.

Upon the model thus obtained we construct the inlay in wax by taking the same precautions as in the mouth, and we insert in it one of the wire points at the least important spot. These operations, therefore, are common to both methods.

April 27, 1908.

TREATMENT OF MERCURIAL STOMATITIS BY METHYLENE BLUE.

(Le Concours Medical, Paris.)

(La Revue Internationale de Prothese Dentaire, Paris, May, 1908.)

Drs. Herbert and Lamoureux had the idea to apply the same treatment as Drs. Chauffard and Siredey have advocated against Mercurial Stomatitis, with methylene blue.

Here is the technic of the treatment which is very simple: Apply topically once daily with a pledget of cotton on all patches or area affected. After this application, the mouth should be washed out in order to remove the excess of methylene blue. The treatment is completed by frequently washing the mouth with a solution of 20 per cent potassium chlorate, cleaning the teeth by removal of all calculous deposits and extraction of all roots.

This treatment under the observations of Drs. Herbert and Lamoureux has proven very rapid and effective.

Cure of mercurial stomatitis has been effected even where the mercurial treatment was in progress.

The methylene blue should be chemically pure and in such cases it has never been known to produce any toxic effects. The quantity which is absorbed by the system is eliminated by the kidneys. Its use is counter-indicated in cases where there is Bright's disease.

BACTERIOLOGY OF PYORRHEA ALVEOLARIS.*

BY HAROLD SIMMS, M. D., L. D. S.

(The Dental Record, London, May 1, 1908.)

(Continued from July.)

3—*Inoculation Experiments on Animals.*

A method that was early adopted was to inject into guinea pigs pus from a pyorrheal pocket, and this resulted in the formation of an abscess at the seat of the injection. When the pus came to be examined it was found that there were present many of the same bacteria as were present in the original pus, but that no one form of variety seemed to predominate or appear with greater frequency than the rest; little, therefore, was gained by that method. Since then every worker has injected each separate bacterium as he isolated it into an animal, with, of course, varying results. I found that three varieties of bacilli I isolated, and in addition the Bac-Mac. buccallis, had no effect on the animals whatever, but the Spirillum invariably killed the animal, although no abscesses were formed.

When I came to inoculate the atypical cocci previously mentioned, I found that much more positive results were to be obtained; in every case where there was not already one of the common pus cocci, there was one of the atypical variety that did produce in a guinea pig a well-marked abscess. The cocci were injected into the peritoneal cavities of the animals and the abscesses were, as a rule, scattered all over the abdomen; distinct abscess formation was to be seen in the liver spleen, kidneys and the abdominal glands.

Before passing on to say a few words about treatment, it will

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*Paper read before The Manchester Odontological Society, March, 1908.

be well to see to what conclusions we may come as the outcome of all the experimenting that has been done. As I commenced by stating, no one has ever found one specific microbe, and few now expect to. The consensus of opinion is that we cannot find any microbe capable of setting up the initial inflammatory symptoms; the only suggestive fact I have come across is the association so often of the spirals and fusiform bacilli already commented on; and that depends so largely on argument by analogy to the throat that we can only look upon it as suggestive evidence. With regard to the later stages, however, we are tolerably certain that the presence of suppuration and also the various results that are the outcome of the septic condition, are directly due to the influence of the several types of staphylococci I have mentioned already.

That this conclusion is a true one is shown by the effects of the vaccination treatment to which I will shortly refer.

However much anyone may cling to the belief that pyorrhea is a general constitutional disease, there can be no doubt but that almost all the accompanying symptoms and complications, slight or otherwise, are due purely to the enormous quantity of pus producing staphylococci, which I have described as being invariably present.

TREATMENT.

To the principles of treatment as commonly practised, I need not refer at all; that resolves itself into cleanliness, astringent drugs, and antiseptics, and however great the care exercised, longer experience than mine declares that the results are as a whole unsatisfactory and permanent cure exception.

I may mention incidentally that the application of the medicinal agents to the gums by means of a compressed air spray, by which a fine spray is driven with a little force thoroughly into the deepest recesses of the pockets, will bring the active inflammation and suppuration under control more rapidly than any other way I am familiar with.

Doubtless you have heard of the method of treating pyorrhea by vaccination introduced by Koadby, which is sometimes referred to as the opsonic method of treatment.

I have not had any experience of this line of treatment myself, but I am familiar with the details of the process, and have a good deal of belief in it, and perhaps it is just worth while explaining to

you what it really means. The fact that a person is the subject of a chronic suppuration is, in itself, a proof that that person has weak powers of combating and destroying the pus producing bacteria. Now what do those powers consist of? Well, of course we know that the bacteria are disposed by becoming eaten up by the leucocytes or white blood corpuscles.

But it has now been proved that before this can occur, the bacteria must first be prepared in some way for this eating up process, and it has been discovered that this duty is undertaken by some rather indefinite portion of the blood serum to which the name opsonin, meaning "to prepare," has been appropriately given. Hence, we see that a person suffering from disease is necessarily deficient in the opsonin relating to the particular bacteria involved.

The whole value of this treatment depends upon the fact that vaccination with a quantity of the necessary kind of killed bacteria has the effect of gradually increasing this opsonic power, so that the patient himself begins to overcome the disease by the stimulation of his own natural protective mechanism.

I shall weary you if I attempt to describe the method in which the opsonic power of a person is tested. It is really very ingenious, and consists essentially of mixing up a quantity of leucocytes, bacteria, and blood serum, and placing them in the incubator for a few minutes; a definite number of the leucocytes are then examined microscopically, the number of bacteria inside them is counted, and this number is compared to the same number of leucocytes using a normal person's blood serum; usually a larger number will be found to be inside these, and the comparison of the one with the other forms a decimal fraction called the opsonic index; thus an index of say 5 means that the person's leucocytes are only enabled to combat half as many bacteria as a normal person's.

Applying this theory, which I have but briefly sketched, to the subject of pyorrhea, we see that those pus forming cocci so constantly present, the patients have been shown by Goadby to have a distinctly low resistance, that is to say, the opsonic index works out well below 1; by vaccinating these patients, therefore, with some of their own cocci, killed by heat, he was enabled to raise the index above normal, and what is more to the point, these patients then proceeded to get rid of the various side symptoms they chiefly complained of, and in addition many of the cases showed such a marked

local improvement, provided that the usual local treatment was also carried out, that it seems fairly clear that these staphylococci do really exert a far-reaching influence on the course of pyorrhea, although we don't for a moment believe that they are the primary cause; and if we are able to counteract the effects of *these* organisms then the further treatment has a far greater chance of overcoming this most obstinate condition. The opsonic method in Goadby's hands has certainly relieved many cases that nothing else would alleviate, and though we would hesitate to recommend it as a routine treatment, yet in some of the worse cases, particularly those where complicating symptoms are complained of, it wocld seem to have a place, and on that account I have thought it just worth while to suggest to you the scientific means by which it has been worked out.

If it has done nothing else, this new innovation has helped to prove to us with certainty that in getting rid of the multitudes of staphylococci surrounding the teeth in pyorrhea, we are really going far to prevent the occurrence of the more serious aspect of oral sepsis. If we realize that from such a comparatively trivial disease septicemia and death may result, then we may feel that we have done to the patients a considerable service in getting rid of all these septic organisms, whether we succeed in restoring the alveolar tissues completely to health or not.

TWO CASES OF TOXICATION WITH COCAINE ANAESTHESIA.

(L'Odontologie, Paris, April 30, 1908.)

Mr. Neuenborn reported at a meeting of physicians in Krepeld his personal experience with two serious cases of cocaine poisoning.

The first case was that of a young lady, age nineteen years, in whom the nasal mucous membrane was anesthetized by a topical application of 7½ per cent solution of cocaine. The amount of cocaine absorbed was about Ogr. 0225 (about one-third grain). The patient, after application, became unconscious and had a violent epileptiform attack, followed by stertorous respiration, but without any cardiac trouble.

The face was cyanosed and the pupil dilated. When the attack had passed away, the patient complained of cephalalgia and torpor of the arms.

The second case, more serious, was that of a young sculptor who was being treated for a case of osteitis of the superior maxillary. Shortly after a topical application of Ogr. .015 of cocaine (about one-quarter of a grain), the patient fell to the floor *as if he had been struck by lightning.* Respiration had entirely stopped, the pupils were dilated, the face was cyanosed, he was frothing at the mouth and the body was in a state of tetanic rigidity. The heart and pulse remained normal with 72 pulsations per minute. The patient recovered only after long efforts to induce artificial respiration had been made, but he suffered from neuralgia for some time afterward.

Neuenborn concluded from these two cases that the respiratory center only was paralyzed and that the cocaine anaethesia had exercised no detrimental effect on the vascular apparatus.

SPENCE METAL.

Is composed of sixty parts of sulphurate of iron, and forty parts of sulphur. Fusing point, 120°.

APPLICATION OF THE SOLBERG PLIER IN BRIDGE WORK REPAIR.

(Le Laboratoire, Paris, April 19, 1908.)

The following case is that of a bridge extending from the second molar to the first bicusbid included.

The first biscuspid was crowned with a porcelain banded crown, which had been broken and replaced three times in the lapse of a year. To prevent the repetition of such accidents the part of the post that extended in the porcelain was cut away and a large tin square post was soldered in its place by means of the electrocautery. The bridge for this operation is not removed from the mouth. It is understood that the post must not have a retentive shape; wax is then applied, and the patient is instructed to bite in order to obtain occlusion, allow the wax to cool, remove it from the mouth and carve the cusps accordingly.

The sprue may now be inserted, case invested, heated and wax burnt out. It may be cast in any karet gold desired, using the Solbrig pliers. We now have a solid gold crown which after polishing may be cemented in place and that will resist mastication without breaking.

ORIGINAL CONTRIBUTIONS

TOOTHSOME TOPICS.

BY R. B. TULLER.

Dad, D. D. S., is takin' a vacation.

He's got his arm in a sling an' walks lame an' hatto take one.

Ma's some sore, too—in her feelings—'cause they's no income an' ther has to be ee-conomy in the house, an' we had plenty before.

I'll bet you can't gess what pa done to git his self hurt in the arm an' his shin.

Well, it wan't no ottermobile, 'cause we haint got none yit, an' I don't see no dust nor hear no chug-chug of one commin' our way this summer.

Maybe we'll hav a hossomobeel if things work out rite after pa gits well. We've got ½ of it.

You see, a feller cum along an' tole pa how he cood make one out of a ole buggy pa took in part pay for a set of teeth—that is, he give a set of teeth an' 'leven dollars an' got the buggy.

Ma sed, "What's the good of a buggy without no horse?" an' pa sed, wait an' see, an' that he didn't want no hoss to be eatin' his hed off ontil he was reddy.

Well, the feller tole pa how he cood konvert the buggy into a otter mobeel. All he hatto do wuz to rig in a steerin' geer an' then git a motor an' set in the back of the buggy an' 'tach to the hind wheels an' then he cood skiddoo all over town as well as ennyone.

Pa he's a reg'lar engineer an' he seen thro' the hull thing at onct, when it wus all pinted out to him, an' he started in to konvert the buggy, beginnin' with the steerin' geer first, an' soon got that O. K.

But 'fore he went an' got a moter he wanted to try the steerin' —besides he wasn't reddy yit to buigh the moter.

Now, this is what pa done with his injeenus. He made a hossomobel. He took the shafts off the frunt of the buggy and hicht them on behind.

"Fer hevin's sake!" sez ma, "what you goin' to do with them fills behind, Joel?"

Pa sez, "Ma, you just wait, an' keep yer eye on yer gran' ole man. I wanter test my steerin' geer, an' git some 'sperience 'fore I go enny furder—'fore I go blow myself fer a moter."

Well, we watched, an' that nite after dark pa went out an' come back leadin' into our alley a ole hoss what he borrowed frum our ole vegitable man fer (2) two dollers; an' the nex' thing we knowed he had that ole hoss hicht head first into them fills, so's his head perty near stuck over the seat.

When pa got all hicht an' lookt all round to see if the harness an' geer an' everything wuz all O. K., he got in an took the hoss by the bridle an' jest led him forward, an', by jocks! heer was pa movin' all rite, leadin' with one hand and steerin' with the other.

Ma jest hopt up an' sed, "Well, I'll be jiggered!" (She got that from me.) "That's certainly injeenus; but I dunno as I can see the 'vantage of it. I've heerd 'bout peeple gittin' the waggin' afore the horse, but I never seen the reel thing afore. Now I'm wonderin' where he's goin' to git off." I gess she had sum sort ov persentment.

Well, I didn't see why I should take enny back seat or git left, so little Joel follered pa out into he street an' wanted to go along.

But pa he sed, no, not this trip, he had use fer me on the ground after a little. But I tagged jest the same.

Well, sir, pa jest traveled rite around one block 'bout 4 times, turnin' them corners jest as well as enny sheffonaer.

Then he handed me the whip an' sez, "Now, Joel, son, I jist want you to tech up the ole hoss, just a *leetle;* just 'nough to go 'round onct or twiste on a trot."

I itched all over to give the hoss two or three good licks; but I didn't want to see pa get hurt, an' so I went at it perty careful an' on'y kept up a trot. Pa made every turn jest as easy as before; an' he tole me to try it onct a little faster.

There wasn't many peeple out, but what ther was wuz gettin' a good deal interested an' hanging' in bunches on the corners to see pa go around, an' cheer\ Some on' 'em was makin' remarks that showed a meen an' jellous feelin', 'cause *they* hadn't got the thing up.

I had the hoss goin' some when the first thing we knowed we

perty nigh bumpt into a cop who came up to see what was doin' an' pa didn't see him an' hadn't no brake.

Now, that copper wuz a fresh one, an' coodent see nothin' in the development ov sience and invention, an' after usin' a lot ov emphatic language that wood frost a yeller dog, an' callin' pa 'bout 13 unlucky names, he sed, "Oi'll run yees in, ye freek, fer exceedin' the speed limit."

But the crowd wuz with pa, an' they sed it wasn't possible to exceed the speed limit with a ole hoss draggin' behind like that; an' pa he sez, "Why, of course not. That's just the reason I've got the old hoss there."

Well, that left the cop lame, an' he begun lookin' fer other things to pick a fuss about, an' he wuz goin' to take dad fer not havin' lamps on his fool rig; but there wus a feller there with a bike who knew pa, an' he jest took his bike lamp an' fixt it to pa's dash, an' sed, "There, now go on; you've got as much rite as ennybody on the street."

The p'liceman made sum more incompertent remarks about freeks an' dope brains an' things, an' finally went off about his bizness.

Then everybody wanted to see pa do his stunts sum more. An' pa, havin' got confidence, tole me to send the ole hoss around jest as fast as he cood go; an' 'bout that time, with the hoss an' me rested, I felt myself like goin' some with all the speed the limit didn't pervent, so I just tuched up th' hosses heels purty lively, an' we went hummin', an' the crowd cheered like it wuz Mr. Brine in the hossomobeel.

Purty soon I coodent keep up, an' about that time pa tho't he had stunted enuff, an' he sez, "That'll do, sonny. We'll go home now. Let'er slow down." But pa hadn't no brake an' I hadn't no lines to pull back on, an' the ole hoss didn't pay no more 'tention to my whoas or pa's, either, than nothin'; but had just got reel waked up to the fun an' he jest kickt up his heel an' made a new spirt.

Pa made the turns all rite, but every time he came to our ally he'd swing out an' make a wide curve an' aim to go in; but every time his nerve weekened an' he'd go on by and try it same way nex' time 'round.

Then he got sore at the hoss an' hit him in the nose with one hand, while steerin' with the other, an' hollered, "Whoa! Back

up! Back up, ye dum fool!" But the hoss on'y bit at him, an' kep' on goin' an' kickin', an' then, wantin' to go to his own barn he begun to try to turn his own way erie spective ov pa's steerin'; and sech wabbly pro-pulsion I never seen before, nor nobody else.

Perty soon the hoss rared an' got one leg over the shaft, an' then it wuz which an' t'other fer sure fer 'bout a block; the crowd havin' more fun than a bar'l of munkeys.

Some of them tried to ketch the hoss, but he made a jump an' got both feet outside the shafts, and then he swung round an' begun to go west when pa was steerin' east—or thought he wuz, until he found that a backward sort of speed motion wuzn't no dreem, an' his steerin' wasn't reel good.

When the hoss got to his own alley, he didn't trouble to make any wide detoor, so as not to hit, but made for it on the short cerkit. So did pa. The hosso-mobeel hit the corner an' skidded over so sudden that pa got out without enny help, bustin' his collerbone, an' his shin looks like it had been dragged a mile 'long a barb wire fence.

Pa sez the demonstration wood a ben all right if it hadn't been that he had a fool hoss. Ma sed, "I gess ther wuz a nuther cimilar reason ahead of the hoss."

There are times when ma makes pa look like 30 cts. I know it from the way he acts. She can rub it in some and then some, when she gits started. She wrote on a card an' pinned it on pa's office door: "Dr. Joel Jerkum, D. D. *F.*, the One-Armed Dentist, is now takin' his summer vacation; but will be back all OK in the fall—mebby." 'Course pa tore it off, an' wuz sore besides his shoulder & shin.

Gee! I don't know whether I want to be the husband of a dentist's wife er not when I git growed.

THE CYMRIC MICROBE.

Taliesin, the Welsh chieftain, who flourished in the sixth century, was as eminent as a bard and a physician, as he was as a warrior. He was the author of several poems, and among them one in which he described "the strange creature" that caused the Yellow Plague, that ravaged North Wales in his time. His description of this disease demon might seem to point to some crude conception of a microbe.

The poem, now nearly fourteen centuries old, which has never before been published, follows:

Discover thou what is
The strong creature from before the flood,
Without flesh, without bone,
Without vein, without blood,
Without feet, without head;
It will neither be older nor younger
Than at the beginning.
Great God! How the sea whitens
When it first comes
Great are its gusts
When it comes from the South;
Great are its evaporations
When it strikes the coasts.
It is in the field, it is in the wood,
Without hand and without foot,
Without signs of old age
Though it be coeval
With the five ages;
And older still,
Though they be numberless years.
It is also so wide
As the surface of the earth;
And it was not born
Nor was it seen.
Its course is devious.
It will not come when desired,
On land and on sea.
It is mild,
It is strong,
It is bold,
When it glances o'er the land.
It is silent,
It is vocal,
It is clamorous,
On the face of the earth.
It is good,

It is bad,
It is concealed,
Because sight cannot perceive it.
It is noxious,
It is beneficial,
It will decompose,
But it will not repair the injury.
It will not suffer for its doings,
As it is blameless.
It is wet,
It is dry,
It frequently comes,
Proceeding from the heat of the sun
And the coldness of the moon.
One Being has prepared it
Out of all creatures,
By a tremendous blast,
To wreak vengeance
On Maelgwn Gwynedd.

REVIEW.

BY THE EDITOR.

It is with pleasure and profit that I review a book entitled "Technique and Principles of Dental Orthopedia," by Calvin S. Case, D. D. S., M. D.

In the preface of this book the author starts out by stating that this work is not intended as an unabridged treatise on principles and practice of orthopedic surgery, but that it is specially intended for teaching the technique and practical principles of dento-facial irregularities in colleges where a thorough training is desired.

In the first chapter of the book the author deals with the material, and the methods of manipulating that material, in the construction of apparatuses for individual cases as they would appear in general practice. The treatment of this part of the work is so well adapted in the matter of simplicity and accuracy that he who may run can read; in fact, the entire book is made up in such a way as to leave no doubt as to the possibility of performing any operation in the irregularities of the teeth, and anyone ought to be able

to follow the work without the slightest bit of trouble provided they study the principles as they are laid down. The elaborate drawings of both the instruments and casts of the mouth as well as the face, makes it one of the most interesting studies in the entire field of surgery. Aside from the teaching feature of the book it is well adapted to the general practitioner who is not always prepared to make his own appliances. He can send his casts to the author and have the work referred to some one who can prepare the appliances necessary for a given case.

The work strikes the writer as coming from a person who is well adapted to the teaching of orthodontia. The author starts out with giving a nomenclature that is most important for the dental student to learn very early in his terminology, whereby the student may be able to grasp the proper understanding of the anatomical relation of the parts upon which he is supposed to become very familiar with in his dental training. For instance, on page seven the author tells in the most accurate and brief manner as possible what is understood by the dento-facial area. He states: "Dento-facial area is the facial area which is supported and characterized by the teeth and alveolar process." He further says, "Dento-facial relation refers to the relation which the teeth in occlusion bear to the physiognomy." These terms in themselves in the way their application is placed here would at once attract the student's power of discrimination and lead them at once to the fundamentals of dental orthopedic surgery. The terse and accurate manner in which the author uses the term precludes the possibility of the student being led into error by a long and monotonous route to the real subject matter, which is beyond any question of doubt the most important thing in teaching dental students.

In chapter ten of this work the author gives the primary principles and diagnosis of treatment, and has published in this chapter the natural anatomical arrangement and occlusion of teeth, so accurately given to the profession by Dr. G. V. Black, with many beautiful illustrations that cannot fail to attract and has in the past attracted the admiration of dentists throughout the civilized world as to what normal occlusion of teeth really means. After thoroughly reiterating this admirable work Dr. Case explains in the minutest detail and yet without the misuse of a single word what abnormal occlusion means in its entire relation to the oral cavity and general

contour of the face. It is really a pleasure and of great interest to review and read the chapters from the tenth to the eighteenth The cuts and the descriptions of the cuts in these chapters makes it one of the most master pieces of dental literature that the profession has had presented. While much of this material has been published in dental journals and has been gone over by the dental profession, it makes it unusually interesting to have before one the work as laid down in this book, where it is easily referred to and systematically treated. While it might be easy for many to criticise and find fault with certain phases of the work; on the other hand it is quite impossible to say that it is not one of the most masterly pieces of dental publications that has been given to the profession for many years, and in fact it would be quite impossible to say that it is not the best of its kind the dental profession has ever had.

Time and space will not permit going into and discussing all the merits of this work, still we can commend it to the dental profession, first, because of the detail and accurate manner in which the material is put together; second, because it portrays in the most accurate manner case after case that comes within the reign of every practitioner; third, because of its value as a text for teaching dental students the fundamental principles that underlie the whole subject of dental irregularities. The last but not least of the reasons for commending this work to the dental profession is because it shows the hand of a master workman, which in itself should attract the admiration of the dental profession throughout the civilized world. While it is understood that orthodontia is a subject that has attracted the general dental practitioner as a subject of vast importance, yet the public is demanding of the dentist that he should understand all phenomena of normal and abnormal arrangement of teeth, it farther demands that he shall be prepared to express an opinion and correct irregularities whenever he is called upon to practice his profession. And a dentist who is incapable of giving the best advice on this important subject is incapable of giving to the community that which is demanded of him. Therefore it is extremely important that the dental practitioners should not only be educated along this important branch of dental practice, but they should have in their libraries both a text book and reference book. Therefore it is important for every dental library to contain this most excellent work of Dr. Case, for it is both a text and reference book.

"MOST IMPORTANT MECHANICAL AND CHEMICAL PROPERTIES OF SILICATE AND ZINC-PHOSPHATE CEMENTS."

DR. MAX KULKA, TESCHEN, GERMANY.

Continued from July.

DETERMINATION OF HARDNESS.

For the determination of the hardness of the cements I proceeded as follows:

Samples made as before (Fig. 2a and b), were left 3 hours at the air and then about three to four weeks under saliva plus water; they were then cleaned, dried, and by means of scratching tests arranged according to Mohs' Scale. Samples which took the same place were tested against each other. It was shown that Ascher's Artificial Enamel was a trace harder than degrees 4 of the scale; the others have the degree 4 of hardness, with the exception of Hoffman's Improved Porcelain Substitute and Agate, which were found to be softer.

DETERMINATION OF THE RESISTANCE AGAINST WEARING.

I used cement blocks (Fig. 72), made as those for the crushing tests. These blocks were likewise placed under saliva plus water about 3 to 4 weeks; they were later fixed in the lever which was used for the measuring of the crushing strength, at a distance of 3 cm. from the pivot by means of a fixing device, which could be moved along the channel-like groovings in the manner of a running weight; they were loaded with 2 lbs. and placed upon a grinding wheel of carborundum (Fig. 9).

This grinding wheel was connected by means of a pulley to the engine, and set in motion. After ten times of uniformly quiet treading of the driller, the grinding wheel, which before every test was cleaned with a brush, had made 55 turns, I determined the shortening of the blocks which had taken place by means of the micrometer screw.

The loss of volume is taken as the measure for the resistance to wearing.

TABLE VI.

Resistance to Wear.

Ascher's Artificial Enamel	0.10 mm.
Speier	0.16
Harvard Cement	0.21

Love's Agate	0.26
Astral	0.28
Harvardid Improved IV	0.40
Wolfson's Porcelain Filling	0.44
Schonbeck's Silicate Cement	0.46
Smaltid	0.46
Lynton's	0.50
Hoffmann's Porcelainoid	0.53
Harvardid III	0.54
DeTrey's Cement	0.56

It is striking that the sequence of this table does not agree with that in the table of the degrees of the hardness. The explanation is, that most cements, by lying a longer time in saliva, soften to a greater or less depth and only a hard center is left. When trying to place it in the scale of hardness, it is impossible to determine at once the degree of hardness correctly with the first stroke; by the often-repeated trying and testing the softened surface layers were successively rubbed off, or rubbed through and only the hardness of the center could be determined.

In testing the wearing, however, the softened external layer of the cements is likewise embraced in the figures above set forth.

POROSITY

Was determined as follows:

Conical blocks, prepared as before and left in the air for about two days, were weighed by means of the analytical scale and were then placed in a receptacle, upon the edge of a step which was formed in its walls. On the bottom of the receptacle there was distilled water about 3 cm. deep.

After the air had been evacuated from the recipient by means of a water air pump, the blocks were thrown into the water by shaking.

They were taken out after half an hour and dried, and were then again weighed; the difference of these weights and those as obtained before the evacuating, gives the weight of the water, which had entered into the pores and of the air which had been previously in them.

According to the sequence of the increase in weight, I obtained the following:

TABLE OF POROSITY.	Grain.
Ascher's	.0014

De Trey Impervious Cement	.0016
Harvardid Improved IV	.0018
Dr. Wolfson's Plastic Porcelain Filling	.0019
Astral	.0024
Dr. Schonbeck's Silicate Cement	.0029
Smaltid	.0029
Harvard Cement	.0032
Harvardid Improved III	.0033
Hoffmann's Improved Porcelainoid	.0034
Lynton's	.0038
Love's Agate	.0040
Dr. Speier's New *Silicate Cement*	.0046

I then placed these blocks in a watery 0.5 per cent solution of methylene blue, in order to determine the degree of

PERVIOUSNESS,

respectively, how far bacteria can possibly enter.

After 24 hours the samples were inspected, and I noticed then especially that, although in making the samples the color No. 1, white respectively yellowish white, had been used, the various cements were differently colored. You see the gradation on the table of the illustration. The intensity of the coloring is of course in the first line dependent on the depth to which the dye had already entered.

But this does not apply to all cements, and I think that the reason why some of the cements showed deeper coloring of their surface, although the same dye was used for all of them, is to be found in the fact that by the 24 hours lying in the coloring liquid their surface had already softened, respectively, had already been partly dissolved and were more intensely dyed by the coloring matter, like a rough wall or some rough paper.

The greenish shades of some of the cements were possibly caused by the yellow fundamental tone, and it is not impossible that the dark shades of some of the cements are due to possible reactions of some still free phosphoric acid, the more so, as in the course of my tests I succeeded several times in showing free, that means, not neutralized, acid, even after a number of days in some of the cements,—for instance, in Hoffmann's improved porcelainoid in one case still on the 21st day.

Most intensely colored were Harvardid Improved III, Hoffman's Improved Porcelainoid, Dr. Schonbeck's S. Silicate Cement, and

Smaltid, the *weakest shade* of *colored appeared* on the *surface* of the *samples* made of Ascher's Artificial Enamel and this letter gave the impression as if the coloring substance could not adhere very well.

SCHEMATIC PRESENTATION OF THE DEGREE OF PERVIOUSNESS OF THE CEMENTS.

DENOMINATION OF THE CEMENT.

Color of the surface after lying 24 hours in 0.5 per cent methylene blue, compared with the color scale according to the Gunter-Wagner.

Schematic presentation of the depth to which the dye had entered after 7 days lying.

After lying seven days in the methylene blue solution, the blocks were split lengthwise, in order to see how far the dye had entered into the several cements. As you can see from the cross sections shown in the table, in this investigation again the sample of Ascher's proved to be the best, since the dye had absolutely not entered at all. It had permeated deepest in Speier's Cement, Love's Agate and Lynton's, some samples of the last named cement were colored blue through and through. Harvard Cement, Dr. Schonbeck's Silicate Cement, Smaltid, Harvardid Improved III and Hoffmann's Improved Porcelainoid showed a more or less broadly colored border, the two last named cements in some cases up to 1½ mm.; in De Tray's Impervious Cement, Harvardid Improved IV, Dr. Wolfson's Plastic Porcelain Filling and Astral, one could distinctly recognize cracks, which appeared as blue, more or less broad lines running from the surface toward the center, and had in a few cases a length of 2 mm.

DETERMINATION OF THE ADHESION.

As the last of the mechanical properties I tried to determine the adhesion of the several cements, as follows:

I placed small, for the sake of safety, gilt metal plugs which had at their one end a base plate, at the other a threading around the first third, upon the bottom of conical borings in small ivory blocks which which were 5 mm. deep and had respectively 4½ and 4 mm. diameter, and fixed them by means of the respective cements.

After one hour of drying, the blocks were left for six days under saliva and water; thereafter there was screwed upon the threading an eyelet which was provided with a nut corresponding to it. The ivory blocks, with the eyelet downwards, were placed into the corresponding

shovel-like fixing device (Fig. 6a), and the whole was fastened in the short prolongation of the testing machine (Fig. 6); it was then connected, as before, with the tackle and was loaded. I was surprised to see that the cemented plugs with the cement block surrounding them wore them out, in the case of almost all the cements, by quite a small and insignificant load. In the subsequent verification tests *I let the blocks first dry about three-fourths to an hour, before I undertook to repeat the experiment, and, lo, my weights were not sufficient to pull out the plugs.*

The explanation of this phenomenon seems to be as follows: Ivory, as I ascertained by several tests, is highly hygroscopic. By the imbibing of water it swells and changes its volume. In consequence thereof, the walls of the borings break away from the samples which were filled in, and I could easily push the latter out, if the blocks were still moist.

That the samples were, however, exceedingly difficult to pull out when the blocks were perfectly dry, proves, not adhesion, which had already been disturbed, but rather the tight clinging of almost all of the cements tested to the walls of the boring.

In order to find some figures for this clinging property, I excluded samples which cling rather firmly even in a most condition, and which had therefore swollen like the ivory; I let the other samples dry, but not completely, and then examined them after about 5 to 10 minutes from the time they were taken out of the water. I obtained the following figures:

TABLE.

Speier's New Silicate Cement	54 lbs.
Harvard Cement	54
Lynton's	35
Agate	33
De Trey's Impervious Cement	23
Hoffman's Improved Porcelainoid	22
Ascher's Artificial Enamel	21
Astral	17
Schonbeck's Silicate Cement	11
Smaltid	11
Wolfson's Plastic Porcelain Filling	7
Harvardid Improved IV	7

These figures, which of course under the circumstances here de-

scribed make no claim to absolute exactness, give an approximate measure for the more or less tight clinging of the several cements, by which anyhow something is gained.

I believe in any case that the determination of the clinging property is the firmness with which the cements cling to the rough surfaces of the cavities. A genuine adhesion, a real sticking of the cements, I consider to be rather out of question, in view of the fact that adhesiveness or stickiness are only colloids or mixtures which contain the same, like glue, gelatine, gum arabic, starch in form of solution, mucilage, etc. We should have to exclude rigorously, however, any cement from our supply of materials, which contains any such corruptible substances.

This leaves for the cements only the possibility of an intimate clinging to the walls and of a mechanical or substantial combination with the dentine. How such a combination is possible is shown by the following example.

A nail, driven into wood or a wall, is much more difficult to remove after a course of years; a firmly tightened screw is after a longer time much more difficult to loosen; we say that the nail or the screw, has "rusted in."

Bodies which have been in contact for a longer time, form at the point of contact an intermediate layer which acts as a putty or cement, and the two bodies pass into each other in the given example by the formation of rust.

We may now assume that also in the case of cement fillings a new intermediate layer, a sort of putty, is formed between the cement and the walls of the dental cavity, by the exchange of chemical constituents, or perhaps by the cements giving a part of the still free acid to the surrounding walls of the cavity and the consequent decalcification of the latter, in consequence thereof, a new intermediate body would be formed, which might be difficult or impossible to prove, but might nevertheless exist, and which acts as putty.

The more intimately the cement clings to the walls of the cavity, i. e., the higher this clinging property as is shown by the preceding table, the more easily might the said supposed intermediate layer be formed, the better is the sticking quality of the cement.

(To be continued.)

ABSTRACTS AND SELECTIONS.

GOLD INLAY SIMPLIFIED.

BY F. A. MOTIS, D. D. S., LINCOLN, NEB.

There is no doubt but that the gold inlay, with its field of usefulness, has come to stay. In the last few years innumerable methods, in conjunction with various machines, have been advocated by some of the best operators in the country. Results vary, due mainly to the simplicity of the method and the degree of skill of the dentist. We unhesitatingly welcome any new method that simplifies the more difficult one, but the results must also be equal or better before the new is considered.

I have made gold inlays of almost every description, from the hollow gold inlay to the solid cast gold one, and in a few instances I even made the gold filling inlay, which most of you have found expedient and necessary. I am going to describe a method which is not wholly original, but is improved—a method of making a veneer gold inlay with or without a pin for absolute safe retention.

Take any large cavity suitable for inlay, and shape as for an amalgam filling. Now, to adapt a platinum matrix to this cavity would be an impossibility, for the depth of the cavity and retention already made would not permit of removing without distortion. This has been one of the most difficult steps in inlay work, before some of the present methods were in vogue. To obviate this and simplify it so that any operator, no matter how skillful, can make a perfectly fitting inlay for this cavity, is the aim and purpose of the writer. Proceed as follows: Take Metalline and fill cavity until it is a little below the enamel line, or fill cavity full, then with a carving instrument cut out Metalline to the depth of enamel over the dentin, or a little more. (See Fig. 1.) With a piece of platinum foil 1-1000 of an inch in thickness, it is quite easy to adapt a matrix in so shallow a cavity, which is only a little more than the thickness of enamel. Place platinum over civity, and with a pair of pliers

and burnisher press pellets of wet cotton into the cavity under pressure, then burnish margin. I might mention here that the margins of the cavity should be beveled, which facilitates making and removing matrix, and the finished inlay sets into its proper place.

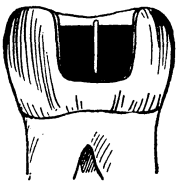


Fig. 1.

Remove matrix, anneal, then burnish into cavity again to get perfect adaptation. Where the depth of the cavity will allow, use a platinum pin by making a hole with a drill through the center of matrix into the Metalline. Place a pin with head into this hole; now dry any moisture there may be in the matrix while it is in the cavity, and paint the inside with Ad-Lac, an adhesive substance, and begin to pack moss fibre gold, in large pieces, into the matrix

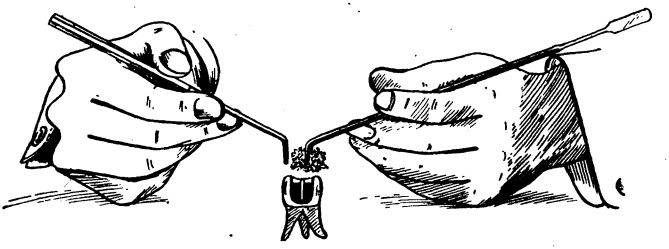


Fig. 2.

cavity. (See Fig. 2.) The Ad-Lac, by its adhesive quality, holds the gold in the matrix and this gold burnished all over the matrix cavity strengthens the matrix and insures removal from the cavity without the otherwise possibility of distortion.

The process, up to this time, of adapting the matrix and packing the moss fibre gold until cavity is about full, takes but a few minutes, even in the largest cavities. Having burnished enough gold to strengthen the matrix, it can now be removed from the cavity, which includes the pin, providing you are making an inlay with a

pin. In some cavities, the pin is unnecessary, or it can be soldered in after the inlay is finished. Paint all portions of the matrix where you do not want the gold to flow, with whiting mixed with water. With a blow-pipe or over a Bunsen burner, fuse the gold in the matrix and add more 24-karat plate gold until you have the desired fullness. Should you want to build out at any portion, it can easily be done by painting with whiting all surfaces of the gold and matrix, except where you wish to add more gold. Any karat of gold can be fused into the matrix, making an inlay of just that karat. I prefer using 24-karat, because it approximates a gold filling, and you do not have to use a flux as is the case with alloyed gold. The inlay being fused, it is washed free of any whiting and tried in the cavity. If there is any place that requires more gold in order to restore the tooth to original contour and occlusion, then paint with whiting again except that portion of the inlay where you wish to fuse more gold. When inlay has proper fullness, trim margins of the platinum matrix and finish as much of it outside of the civity as possible. Now warm the Metalline in the cavity with a warm instrument or a chip blower, and remove it; dry cavity and set inlay with cement, using as much pressure as possible. When completely set, grind, polish and finish as you would a gold filling.

The result is a perfect inlay and a shorter and simpler method. There is no investing compound to mix and to wait until set, or impressions to take of irregularly-shaped cavities in wax or other materials. With the moss fibre and Ad-Lac, you strengthen the matrix. And further, one has all the good requisites of an inlay with a minimum amount of gold. Then, too, the large amount of cement gives additional strength in retention, and where the cavities are large and walls somewhat frail, it holds the tooth together and bears the stress in mastication to a greater degree.—*Western Dental Journal.*

MEETINGS

WISCONSIN STATE DENTAL SOCIETY.

Extracts from two papers given at the Thirty-eighth Annual Meeting of the Wisconsin State Dental Society, held at La Crosse, Wis., July 21, 22, 23, 1908.

The "Art of Invention," by Dr. Charles Channing Allen, Kansas City, interested all by the new treatment of rather a new subject in dentistry.

"We emerge from animal instinct to invention, but imagination is very necessary in this step; it is not necessary to be in the possession of facts, but one must have *understanding*. Knowledge comes from understanding. Not understanding from knowledge: the advancement along understanding progresses, as it were, unconsciously. God has infinite knowledge, because he "understandeth all things." Imagination may be divided into three parts, viz.: Creative, reproductive and critical. Sometimes things come to us at once, then again after years of thought and study along certain lines when we are about to give up, possibly, suddenly the clouds of doubt vanish and all is clear and bright.

How many, many times does the inventor work without any hope of future reward, working day after day that he may benefit humanity. He eats as an incident, and sleeps when fatigue overcomes him. Of course there is the wild-eyed and impractical man who simply does harm—he is visionary, not necessarily imaginative.

In the discussion that followed Dr. Allen was agreed with and thanked for his treatment of the subject, the fact being further dwelt upon that "dentistry prospers by imagination." It was closed with these remarks:

"To be successful the dentist must have imagination to conceive, judgment to direct and courage to execute."

"Some Views on Infant Dentition," by Dr. E. A. Geilfuss of Milwaukee, Wis., was another paper on a subject not often heard at conventions. Dr. Geilfuss' paper showed a great deal of thought and research, he having gone back to 131-203 B. C. Following this

date comes Aristotle (324 B. C.) and later of note; Paul of Aggina (625-690 B. C.), who notes the possibility of convulsions during teething, and many other writers down to the present time, some of whom recommend *lancing* and others do not.

The process of teething is as much a physiological process as the development of the cerebrum, the liver or any other organ or appendage. In some cases infantile diseases are the cause of retarded dentition, for, as is well known, disturbed nutrition will retard the development of an organism in proportion to the extent of the interference with the nutritional process. In other cases, however, the constitutional disorders are due to a constant irritation of the highly sensitive pulps of the not fully developed deciduous teeth. Parriedt, in a careful analysis of the literature on the subject, arrives at the conclusion that "it is impossible for dentition *per se* to affect the child deleteriously, and that as a consequence a normal child will teeth under all circumstances without any pathological manifestation."

These conditions are diametrically opposed to those I draw as a result of a careful study, combined with my own clinical experience. The dentist as a rule is not consulted in cases involving dentition unless he has been previously able to educate the parents. If you have followed my presentation of views on this subject you will notice that in bygone ages from the beginning of medical lore and knowledge, it grew to be the belief that practically all diseases affecting a child during the dentitional age were always due to teething. Then, as medical knowledge advanced, the position was gradually taken that dentition was never a direct causative factor.

That medical men believe now that disturbance, if any, is due to its pressure on the gums and that most of the arguments *against* the possibility of dentition being a factor in systemic disturbance is due to that fact that there is not a proper understanding of the embryology, histology and anatomy of the teeth on the part of the physician, who seldom considers it necessary to consult the dentist.

WASHINGTON STATE DENTAL SOCIETY.

At the annual election of the Washington State Dental Society held June 25-27 the following officers were elected to have charge of the affairs of the society for the coming year:

Dr. George T. Williams of Seattle, president; Dr. F. L. Moak of Montesano, vice-president.

The following were elected to serve on the executive committee: Dr. Geo. T. Williams, and Dr. C. A. Holmes and Dr. E. S. Barnes of Seattle.

The dentists present held a lengthy discussion on a proposition to hold a Pacific Coast congress of dentists at Seattle during the A.-Y.-P. exposition. Sentiment, however, was opposed to the move.

VIRGINIA STATE DENTAL ASSOCIATION.

After one of the most successful and instructive sessions in its history, the Virginia State Dental Association closed its thirty-ninth annual convention immediately after the election of officers for the ensuing year.

Officers were elected as follows:

President, Dr. F. A. Lee of Lynchburg; first vice-president, Dr. E. J. Applewhite, Newport News; second vice-president, Dr. F. W. Stiff, Richmond; third vice-president, Dr. W. H. Moseley, South Boston; recording secretary, Dr. George F. Keesee, Richmond; corresponding secretary, Dr. W. H. Pearson, Hampton; treasurer, Dr. William M. Sturges, Norfolk. Executive committee: Drs. William Pilcher, Petersburg; J. H. Manning, Norfolk; C. T. Womack, Martinsville.

NEW JERSEY STATE DENTAL SOCIETY.

The New Jersey State Dental Society held its thirty-eighth annual meeting at Asbury Park closing July 17th. The following officers were elected for the ensuing year:

President, Frank G. Gregory, Newark; vice-president, Charles H. Dilts, Trenton; secretary, re-elected, Charles A. Meeker, Newark; treasurer, re-elected, Henry A. Hull, New Brunswick. The executive committee officers were elected as follows: Harvey Iredell, New Brunswick; Wallace F. Naylor, Somerville; W. W. Hawke, Flemington, and Henry Fowler, of Harrison.

DENTAL WORK AT INSTITUTIONS.

In the recent annual convention of Illinois dentists a report was made of the dental work that is being done in the state charitable institutions. Two dentists have been placed in the service; at the General Hospital for the Insane, Peoria, and the Eastern Hospital

for the Insane, Kankakee. It is the idea of the superintendents that insane patients will be more healthy and will partake of their foods with greater enjoyment if their teeth are given the same care that is bestowed upon the mouths of the sane.

Superintendent George A. Zeller was the first to carry out the suggestion of the State Board of Charities that dental internes be employed. On September 27, 1908, he secured the services of Dr. Walter J. Weatherwax. While no official report has been published by Dr. Weatherwax, the work done by him in six months is shown to have been as follows: Number of patients treated, 931; teeth and roots beyond repairs, extracted, 2,753; tartar removed and teeth cleaned for 412 patients; pyorrhea treated, number of patients, 10; abscesses lanced, number of patients, 5; pulps removed and roots filled in 3 teeth; amalgam filling placed in 22 teeth; cement filling made in 67 teeth.

Dr. Weatherwax made the following statement concerning this work: "My limited experience with the mouths of the insane has been to find them in the worst possible condition. They have had no care for years. They have badly decayed teeth and roots covered with deposit; their gums are inflamed and diseased. The plan I would suggest would be to extract all these roots and badly diseased teeth, clean off the tartar on the remaining teeth and keep them in as healthy a condition as possible. I believe the patients will be in better health with these teeth out, that the food may reach the stomach in a pure condition and not be mixed with bacteria that comes from teeth in such a bad condition. The breath from some of these cases is so bad that it is almost impossible to stand near them long enough to extract the teeth."

*No report has been received from Dr. George Mills, at the Eastern Hospital for the Insane. He has been in that institution since December 24, 1907. The Illinois Dentists' Association commended the work of the state administration in securing dentists for these institutions, and recommended an extension to all institutions.

MISSOURI STATE DENTAL ASSOCIATION.

At the Forty-third Annual Meeting of the Missouri State Dental Association, held at the Planter's Hotel, St. Louis, the following officers were elected for the ensuing year:

* We have since received report of Dr. Mills too late for this issue.

President—J. B. McBride, Springfield.
First Vice-President—R. E. Darby, Springfield.
Second Vice-President—E. P. Dameron, St. Louis.
Recording Secretary—H. H. Sullivan, Kansas City.
Corresponding Secretary—J. F. Wallace, Canton.
Treasurer—J. T. Fry, Moberly.
Meeting of 1909 to be held at Kansas City.

J. F. WALLACE, Corresponding Secretary.

NORTH CAROLINA DENTAL SOCIETY.

The North Carolina Dental Society, at its recent meeting in Charlotte, elected the following officers for the ensuing year: F. L. Hunt of Asheville, president; I. Wilton Jamieson, Charlotte, first vice-president; R. G. Sherrill, Raleigh, second vice-president; J. C. Watkins, Winston-Salem, secretary; C. P. Norris, Durham, treasurer; F. W. Eubanks, Hendersonville, essayist. The next meeting will be held at Asheville.

PENNSYLVANIA STATE DENTAL SOCIETY.

The Pennsylvania Dental Society at its recent meeting reorganized, adopting the Illinois plan of encouraging local societies. The following were elected officers for the ensuing year: President, C. B. Bratt; first vice-president, W. D. De Long of Reading; second vice-president, C. C. Walker, Williamsport; recording secretary, L. M. Weaver, Philadelphia; corresponding secretary, V. S. Jones, Bethlehem; treasurer, M. A. Spencer, Carbondale.

DENTAL MANUFACTURERS' EXHIBIT.

There will be a Dental Manufacturers' Exhibit held at the Sinton Hotel in Cincinnati, Ohio, on Tuesday, October 27; Wednesday, October 28; Thursday, October 29, and Friday, October 30.

Other announcements later.

INDIANA STATE DENTAL ASSOCIATION.

The semi-centennial jubilee meeting of the Indiana State Dental Association was held at Indianapolis, June 4, 5 and 6. The following officers were elected for the ensuing year: D. A. House of Indianapolis, president; H. C. Sexton of Shelbyville, vice-president; O. U. King of Huntington, secretary; C. W. Throop of Muncie, treasurer.

UTAH DENTAL ASSOCIATION.

The Utah Dental Association held its eighteenth annual convention June 16 at Salt Lake City. The following officers were elected for the ensuing year: President, H. K. Weber of Salt Lake City; vice-presidents, O. H. Budge of Logan and C. W. Gates of Salt Lake City; secretary-treasurer, H. T. Emise of Logan; executive committee, D. O. Budge of Logan, J. P. Stewart and J. B. Gordon of Salt Lake City. The next annual convention will be held at Logan.

MINNESOTA STATE DENTAL ASSOCIATION.

The Minnesota State Dental Association held its annual convention at St. Paul June 10. The following officers were elected for the ensuing year: President, H. B. Kramer of Minneapolis; vice-president, A. W. Gallagher of Winona; secretary, F. E. Cobb of Minneapolis; treasurer, C. H. Robinson of Wabasha.

GEORGIA DENTAL ASSOCIATION.

The Georgia Dental Association held its annual meeting at Augusta June 2, 3 and 4. The following officers were elected for the ensuing year: C. P. Davis of Americus, president; W. C. Miller of Augusta, vice-president; Geo. S. Tigner of Atlanta, second vice-president; D. H. McNeil of Athens, corresponding secretary; DeLos Hill of Atlanta, recording secretary; H. R. Jewett of Atlanta, treasurer, and H. H. Johnson of Macon, Journal editor.

OKLAHOMA DENTAL ASSOCIATION.

The Oklahoma Dental Association held its annual meeting at Muskogee, Okla., June 8, 9 and 10. The following officers were elected for the ensuing year: A. L. Walters of Checotah, president; G. C. Wallace of Shawnee, first vice-president; N. C. Wood of Ardmore, second vice-president; L. G. Mitchell of Oklahoma City, treasurer. The next meeting will be held at Oklahoma City.

MISCELLANEOUS

TANNIN IN DENTAL PAIN.

Knev (*Wien. med. Presse*), as a dentist in Ischl, where neuralgia of dental origin is extremely prevalent, has had great experience in the treatment of this disorder. The most universally useful application to the gums is a lotion of two parts of tannic acid to ten parts of rectified spirit. When this is painted on the gums and around the teeth, it relieves almost every kind of dental pain. It is also the best application in alveolar pyorrhea. Loose teeth under this treatment soon become tight, and regain their power of mastication.—*British Medical.*

ALTERNATING CURRENTS.

OSLER.

Dr. Osler was 60 years old July 12.

"Doc" Osler's reached the age at which he says men ought to die,
But has he picked the quiet place in which he longs to lie?
He's up and doing still, they say, and planning as of yore;
No hearse, as far as we can learn, is waiting at his door;
No crape is fastened to the knob that still obeys his hand;
He has not gone to twang a harp in any angel band.

"Doc" Osler's three-score years of age, his limit for all men,
But probably he's hoping now to add another ten;
He has not calmly gone to bed intending there to stay
Until his friends with solemn tread shall carry him away;
He has not put his work aside, nor ceased to go to meals;
It may be that he sometimes boasts about how young he feels.

"Doc" Osler's sixty years of age and still alive and well;
The world to him may seem a fine old place in which to dwell;
But let us not upbraid him for the fact that he remains,
Nor envy him for any of the pleasures that he gains;
Be charitable to the "doc," and, being so, let each
Remember that the men are few who practice what they preach.

—*S. E. Kiser, Chicago Record-Herald.*

SMOKED GLASSES FOR CAST GOLD INLAY WORK.

Since cast inlay work has met with the approval of the dental profession, it would be well to bear in mind that it is essential to wear dark or smoked glasses in order that the state of fusion when the gold has reached the correct temperature may positively be ascertained. It is at this point in the procedure where part of the success in this method may be attributed. This should appeal to every one who enjoys the pleasure of casting gold inlays.—*Bernard Bramm, Review.*

GOLD FILLINGS IN PORCELAIN.

To put a gold filling in a mineral tooth, grind a depression in the tooth where the filling is required, then cover the ground surface with a little Jenkins inlay, or other low-fusing body, and on this press a piece of sponge gold the same size. Fuse this in furnace, and then condense gently with engine mallet, add gold and finish in the same way as with a gold filling. If required, a tooth may be entirely faced with gold in this manner, giving the appearance of an all-gold crown, the inlay body holding the first layer of gold quite firmly, if ordinary care is taken as with a gold filling.—*Chas. Every Brown, British Dental Journal.*

INVESTIGATION OF PYORRHEA.

The following letter has been sent to the various dental societies and a copy has been received by THE AMERICAN DENTAL JOURNAL with request to publish:

NEW ORLEANS, La., May 24, 1908.

GENTLEMEN:—Our object in writing your society is to enlist your co-operative efforts in having the president of your society appoint a committee, as our society has done, for the purpose of investigating pyorrhea alveolaris, its causes, symptoms (in its earliest stages), origin, treatment, cure and its prevention. We are to report at our next annual meeting.

This disease is the knottiest problem that confronts our profession and our mission is, therefore, to write to all dental societies with a view to getting their co-operation by appointing committees to help in this investigation so as to concrete the opinions of the profession at large on this disease.

The list of questions which you also receive with this letter is to be answered by your committee and to be forwarded to the chairman of this committee. We hope in this way to arrive at a settle-

ment of some of the questions, and we may in the future be able to obtain aid from the government to ferret out the cause, treatment, cure and prevention of this disease. Yours fraternally,

E. H. RAMELLI, Chairman.

No. 620 Canal Street, New Orleans, La.

Committee:—Drs. Jules J. Sarrazin, H. E. Belden, E. H. Ramelli.

QUESTIONS.

Do you consider pyorrhea alveolaris incurable?

Do you know of any cases that have been cured?

In what stages were the cases when first under observation?

Have you ever recognized the disease before serumal calculus appeared?

What were the symptoms?

Do you think salivary calculus has any effect on the disease?

Were the patients under your observation of robust or delicate physique?

Have you ever seen the disease in youth, and at what age?

Do you know of any properly treated devitalized teeth being lost by the disease?

Did the devitalization and root canal sterilization and filling precede or follow pyorrhea development?

At what time of life do you find treatment most efficacious?

Do you find pyorrhea more in males or females?

Do you find it more in the upper or lower jaw?

Does the disease attack all teeth alike?

Were patients ever afflicted with syphilis, tuberculosis, uricaemia, chronic indigestion or chronic constipation?

Have you ever seen cases where malocclusion was a cause?

Do you think autointoxication a cause?

Do you think uricaemia a cause?

Is it a disease of the gum?

Is it a disease of the alveolar process?

Is it a disease of the peridental membrane?

(It is of the utmost importance, in order to insure the success of this vital investigation, that your society should take this matter up at once and favor us with an early answer, giving the disposition decided upon at your meeting and action taken.)

PERSONAL AND GENERAL

Dorwort-Cole.—Dr. J. W. Dorwort and Miss Carrie Cole, both of Aurora, Neb., were married July 15.

Steele-Glass.—Dr. A. J. Steele and Mrs. Jennie Messick Glass, both of Louisville, Ky., were married June 20.

Payne-Granbery.—Dr. E. A. Payne and Miss Bessie Granbery, both of Tullahoma, Tenn., were married July 4.

Gholson-Taylor.—Dr. Milton Gholson and Miss Naoma Taylor, both of Cumberland City, Tenn., were married June 21.

Marlowe-Nicol.—Dr. Searcy Marlowe of Tuscaloosa, Ala., and Miss Mabel Nicol of Topeka, Kas., were married June 17.

Helburger-Fisher.—Dr. Joseph J. Helburger of Washington and Miss Alice Fisher of Louisville, Ky., were married June 17.

Holden-Anderson.—Dr. W. H. Holden of Clarksburg, W. Va., and Miss Rosalia Anderson of Chicago were married in Cincinnati recently.

Dental Alumni Subscribes.—The Harvard Dental Alumni, at their annual meeting held in Boston, subscribed $24,700 of the $30,000 required for the new Dental School.

Lee-Chan.—Dr. Charles G. Lee, a Chinese dentist, and Miss Clara E. Chan, both of Oakland, Cal., were married June 25. They will make their home in San Francisco.

Robberies.—Drs. J. M. Chase, Dayton, Ohio, loss $30.50; H. C. Parker, Omaha, Neb., loss $20; F. W. Slabaugh, Omaha, Neb., loss $40; H. F. Parr, Indianapolis, Ind., loss $15.

Arrested at Convention.—A Paris dentist, after having read a paper at the Penn State Society, was arrested on complaint of his wife on charge of desertion. He was held in $600 bail.

Dentist Taking Treatment.—Dr. J. D. Leach, the Ravenswood, Ill., dentist, who has been suffering from rheumatism for some time, is taking baths at St. Joseph Mineral Springs, at St. Joseph, Mich.

Retires From Harvard Company.—Dr. W. Stuart Carnes, who has been connected with the Harvard company for eleven years, has severed his connection with that company and will devote all his time to the Canton Cutlery Company, of which he is sole owner.

Dentist Injured.—Dr. R. L. Zelenka, at New Orleans, was severely injured when a gasoline stove exploded. He was seriously burned about the face and hands and considerable damage was caused in his office by the flames.

Maharajah of Sikkim Has Toothache.—Prince Kumer, who is now touring the United States, being seized with a severe case of toothache, called in a dentist in New York, who promptly extracted a tooth, $30 and two howls.

Dandy Dentist Wanted.—Dr. Byland went to Covington to get some dental work done last Tuesday. Where is there a diligent, dandy dentist that's looking for a good location like Crittenden?—*Crittenden, Ky., Correspondent.*

Williams-Jones.—Dr. W. J. Williams of Columbus, Ga., and formerly of Atlanta, and Miss Annie Maud Jones of East Point, Ga., were married in Macon, July 15. Their home will be in Jacksonville, Fla., where Dr. Williams will resume practice.

Dies From Fright.—Mrs. Joseph H. Muenster, 24 years old, died from fright in the office of S. S. Shackleford in Austin, Tex., recently, before a tooth she was to have extracted had been touched by the dentist. The attendant physician said death was due to heart disease superinduced by fright.

Ki Psi Phi Meets.—North Carolina chapter of Ki Psi Phi fraternity, at its meeting held recently, elected the following officers for the ensuing year: Dr. I. W. Jamison, Charlotte, president; Dr. J. R. Highsmith, vice-president; Dr. D. K. Lockhart, Asheboro, secretary, and Dr. F. L. Hunt of Asheville, corresponding secretary.

Traveling Dentist's Bad Job.—A "dentist" has been working in this county, but his work is of the poorest order. Mrs. Mason Farley, living near Fountaintown, employed the man to work on her teeth. He put in a supposed gold filling, but it turned out to be brass. Mrs. Farley was taken very ill, and blood poisoning followed. The tooth had to be extracted and powerful medicine used to save her life.—*Greenfield, Ind., Democrat.*

Dentist Shot by Mother-in-law.—Dr. James Simpson, who is practicing dentistry in New York City, and who shot and killed his father-in-law in 1905, was shot and seriously injured by his mother-in-law, Mrs. Horner, at Northport, L. I., July 13. Simpson had called at the home of Mrs. Horner, where his wife was living, and been refused admittance and was shot through the glass door. Mrs. Horner was held in $5,000 bail, signed by her daughter, wife of the man she shot.

Removals.—Drs. F. N. Wells, from Omaha, Neb., to West Point, Neb.; H. C. Mueller, from Ackley, Iowa, to Marshalltown, Iowa; A. D. Raffington, from Great Bend, Kas., to Hutchinson, Kas.; F. A. Fidler, from Chicago, Ill., to Watseka, Ill.; H. E. Roberts, from Independence, Kas., to Topeka, Kas.; C. H. Gray, from Cleveland, Ohio, to Syracuse, N. Y.; R. M. Bondy, from Chicago, Ill., to Galesburg, Ill.; R. R. Mundell, from Galesburg, Ill., to Chicago, Ill.; W. L. Scott, from Navasota, Tex., to Austin, Tex.; G. O. Ruff, from Shelbyville, Ill., to Paris, Ill.; E. G.

Fitzgerald, from Coggon, Iowa, to Cedar Rapids, Iowa; H. A. Knott, from Tipton, Iowa, to West Liberty, Iowa.

State Board Affairs.—A receiver has been appointed and affirmed by the State Supreme court for the Washington State Board. The trouble grew out of suit by Attorney S. R. Stern, who sued the board for services and secured judgment for $1,400. The Virginia State Board met in Richmond, July 14-16, and elected the following officers for the ensuing year: President, H. W. Campbell, Suffolk, Va.; secretary and treasurer, R. H. Walker, Norfolk; assistant secretary, J. P. Stiff of Fredericksburg. The next meeting will be held in Richmond in 1909. The Texas State Board held a five days' session, adjourning June 19. Sixty-two applicants were examined. The following officers were elected for the ensuing year: H. W. Lubben of Galveston, president; S. G. Duff of Greenville, vice-president; Bush Jones of Dallas, secretary. The next meeting will be December 15-20, at Houston. A dentist at Bowling Green has been fined $100 for illegal practice. C. W. Meguiar of Munfordville, Ky., has been elected president of the Kentucky State Board. Roy McClurg, a dentist in Washington, Ill., who recently pleaded guilty to illegal practice and paid a fine of $50, and who was rearrested after having employed a registered dentist, was found not guilty by a jury and released. At the meeting of the Idaho Board of Dental Examiners, held recently, William Youngberg of Harrison was elected president to succeed C. E. M. Loux of Pocatello. E. L. Barnes was re-elected secretary. Ten candidates were examined and seven admitted to practice. The next meeting will be December 28-30 at Boise. A dentist in Riverside, Cal., has been arrested for having in his employ an unregistered dentist. At a meeting of the Wisconsin State Board J. J. Wright of Milwaukee was elected president and F. A. Tate of Rice Lake secretary.

NECROLOGICAL.

Dr. W. T. Penny, a dentist at Abbeville, S. C., died June 21. He was 71 years of age and had practiced his profession forty years.

Dr. W. B. McChesney, a dentist at Chicago, Ill., died June 29. He was born at Latrobe, Pa., in 1839 and come to Chicago in 1870.

Dr. J. C. Glynn, a dentist at Memphis, Tenn., died July 8. He was 31 years of age.

Dr. W. F. Morrill, a dentist at Louisville, Ky., died July 13. He was 83 years of age.

Dr. W. T. Bond, a dentist at Mercer, Tenn., died July 8. He was 61 years of age.

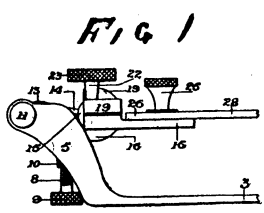
Dr. J. F. Griffith, a dentist at Salisbury, N. C., aged 57 years, died suddenly July 16. He was prominent in the North Carolina State Dental Association and in municipal and other public affairs.

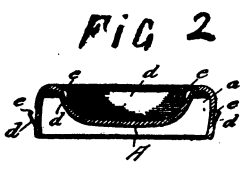
Dr. John Price Williams died in Nashville, Tenn., of consumption. Deceased was 46 years of age and had practiced his profession at White's Creek, Tenn., and Union Hill. He was a graduate of Vanderbilt University.

DENTAL PATENTS

Fig. 1.

882,375. Dental Articulator—Albert V. Dear, Malvern, Victoria, Australia, assignor of one-half to David Philip Dear, Wollongong, Australia. Filed September 6, 1907. Serial No. 391,713. Claim 1. In a dental articulator, a lower plate, a yoke pivoted thereto, an upper plate having a cover hinged thereto, said plates being correspondingly recessed to form a socket, a ball on said yoke engaging said socket, and a cast holding device secured to said upper plate.





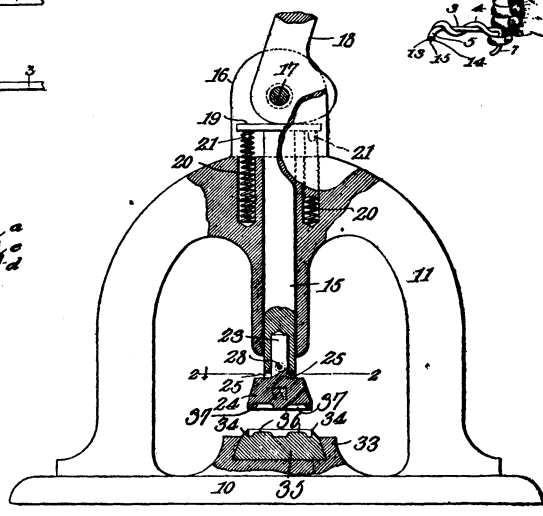


Fig. 2.

884,159. Dental Plate—Edwin A. Jackman, Hartington, Neb. Filed August 9, 1907. Serial No. 387,914. Claim 1. A set of teeth comprising a swaged plate having an integral welt extending around the plate, and a tooth-carrying rubber anchored on the plate by the welt and clamped between the plate and welt.

Fig. 3.

883,382. Removable Dental Bridgework—Ernest C. Bennett, New York, N. Y. Filed April 16, 1907. Serial No. 368,493. Claim 1. A denture comprising a stationary or crown abutment, an interlocking shoulder thereon, a frame member extending from said abutment above and to one

side of the ridge of the gum and having a laterally offset end portion forming a second abutment, and a removable bridge member adapted at one end to said interlocking shoulder and at its other end to said second abutment, said frame lying along the side of said bridge when the latter is in place.

Fig. 4.

881,574. Dental-Crown-Swaging Machine.—Laurence C. Graham, Wigham, Ga. Filed November 6, 1906. Serial No. 342,280. A manually operable crown swaging device comprising a base plate having a dovetailed groove, a combined cutting and swaging die disposed therein, a frame carried by the base and provided with a vertical guiding opening in alinement with said die, a pair of pivot ears extending upward from the frame and provided with parallel inner walls, a plunger rod extending through the guiding opening, a plate secured to the top of the plunger rod, the opposite sides of said plate engaging the side walls of the pivot ears to prevent turning of the plunger, a cam lever arranged to operate on said plate, springs for elevating the plate and rod, the lower end of said rod having a central opening, and, being provided with a diametrically extending recess, a movable cutting and swaging die having an integral stem arranged to fit within the opening of the plunger and provided with a pair of the ribs arranged to fit within said diametrically extending recess, and a spring actuated locking pin carried by the plunger and arranged to fit within an opening formed in the stem, substantially as specified.

Fig. 5.

876,526. Dental Extractor. Otakar Cholinsky, Prague, Austria-Hungary. Filed May 31, 1907. Serial No. 376,536. 1. A dental extractor, comprising, a member comprising a handle and at right angles thereto a straight shank presenting a jaw, and a complementary member comprising a handle and at right angles thereto a spirally twisted shank embracing the first shank, and also presenting a jaw, substantially as described.

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